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Three Sulphite Mills Planned for Ontario

Hon. Peter Heenan, Minister of Lands and Forests Intimates Agreement For These Projects Is Close To Being Reached—To Build Chlorine Plant —Hinde & Dausch Look For Banner Year — Fair Play In Newsprint.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 12, 1937—Hon. Peter Heenan, Minister of Lands and Forests for Ontario, announced last week that negotiations were under way between the Hepburn Government and interested capital for the construction in Northern Ontario of three new sulphite mills. "An agreement has still to be reached," Mr. Heenan said, "but we are very close to it."

Under the timber policies of the present administration 901,000 tons of newsprint were produced in 1936; 880,000 cords of pulpwood were cut from Crown lands; 20,000 men were employed in the bush, and wages, especially in the Thunder Bay district, increased on an average of 15 per cent. The expenditure on the construction of new mills and on extensions to old plants, under agreement negotiated by the Government, and in the course of negotiation by the Government approximate $41,000,000, Mr. Heenan said.

In 1933, the last full year of the Henry Administration, stated Mr. Heenan, the pulpwood cut from Crown lands was only 181,939 cords, newsprint production, 599,000 tons, and the number of men employed in the bush, 4,000 to 5,000.

The Minister of Lands and Forests, who has been very active personally in canvassing for new sulphite industries, leaves shortly for a week's inspection of timber and power conditions in Northwestern Ontario. While away he will be banquetted at Fort William, Port Arthur, Fort Frances, and Kenora by the Boards of Trade of those municipalities.

Canadian Industries Expanding

The erection of a third unit for the manufacture of caustic soda and chlorine, representing a capital investment of more than two million dollars, is announced by Canadian Industries Limited, with mills at Windsor and Cornwall, Ont. Work at the new plant, which adjoins the Company's cellophane and hydrogen peroxide plants at Shawinigan Falls, has already been commenced. It will take a year to complete and will eventually give employment to over 60 men, with between 200 and 300 engaged on construction. The contract has been let to Fraser Brace Engineering, Ltd. The building will be of brick and steel, with cement foundations and will be mostly one story, occupying a land area of about 16 acres.

Officials of the company state that the new plant is being erected chiefly to meet the growing demand for bleached sulphite pulp and rayon pulp which market forecasts show to be in excess of present capacity. The company's two other plants manufacturing caustic soda and chlorine are located at Windsor and Cornwall and the new plant, when completed, will serve the demands of Quebec and the Maritime Provinces. It is being located at Shawinigan Falls on account of the availability of power and because services already installed for existing plants will provide operating economies for the new unit.

Sodium chlorine, or common salt, which, apart from power, is the only important raw material for the electrolytic process, will be shipped by rail or road to the plant. The lower freight rates made available by an eastern shipping point will be another factor in economic operation.

Newsprint Makers and Fair Play

An opinion very widely held in the Dominion is that Canada dominates the newsprint markets of the world, and now that supply is overtaking the demand, the consumer should be made to pay enough to compensate for the low prices of former years. Some manufacturers subscribe to this view, it is pointed out. American publishers, who purchase about 80 per cent of the Canadian output, are concerned about the outlook. In order to make themselves less dependent upon Canada as a source of supply they have been encouraging the manufacture of newsprint from Southern slash pine. The Southern United States contain an important supply of fast-growing pine and have other advantages which, if utilized for the commercial production of newsprint, would seriously jeopardize the welfare of the Canadian industry. It is pointed out that there is a tendency to take lightly the development of a Southern newsprint industry, because of the difficulties which have been encountered in the past. In the opinion of many it is unwise to minimize the potential threat of slash pine, for it is not inconceivable that the center of the newsprint industry may swing from Canada to the Southern states which are now the center of the kraft paper industry. Eventually southern newsprint may be a

(Continued on page 52)

Gain in Employment Shown in Paper Mills

Wisconsin Industrial Commission Reports Increase of 1.9 Per Cent For Month Ending May 15 — Progress Is Reported In Organizing Independent Unions—Engineer States That River Pollution Is Almost Conquered.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 12, 1937—Thomas W. Orbison of Appleton, Wis., whose career for fifty years as engineer had much to do with the upbuilding of the paper industry in Wisconsin, died July 6, following several years of failing health.

Mr. Orbison was born November 11, 1854 at Plover, Wis., came to Appleton as a young man, and lived there nearly all his life. He attended Lawrence College of Appleton, and was graduated as a civil engineer from Union College, Schenectady, N. Y., in 1876. After his return to Appleton he organized the firm of O'Keefe & Orbison, with which he was connected until 1912. The firm of Orbison & Orbison was then organized, with his son Thomas E. Orbison as his partner.

Coming to a locality rich in water power where the paper industry was just developing, he became an expert in this field. He played a prominent part in the development of water power and was an authority on such projects. He designed and supervised the construction of many of the paper mills in Wisconsin and their later additions. He was a member of the commission which in the early days brought Thomas A. Edison to Appleton to try out the first electric street car known to the world.

Mr. Orbison at one time served as an alderman of the City of Appleton. He was a member of the Congregational church, and a charter member of the Rotary Club, Riverview Country Club and the Elks Lodge of Appleton. He and Mrs. Orbison, who preceded him in death, celebrated their golden wedding anniversary in 1930.

Funeral services were held at the home of his son, Thomas E. Orbison, and burial was made in Riverside cemetery at Appleton.

Employees of the Kimberly-Clark Corporation's mill at Kimberly, Wis. held a primary election last week among members of its newly formed independent union. Each department voted for two representatives. The names of all of these will appear on a ballot from which ten will be chosen. These will elect a president, vice-president, secretary and treasurer, and will choose a grievance committee. The organization now has 617 members out of 811 hourly employees, or 84 per cent. The total number of votes cast in the primary was 352.

Wausau Paper Mills Company, Brokaw, Wis., signed a closed shop agreement last week with the International Brotherhood of Pulp, Sulphite and Paper Mill Workers and the International Brotherhood of Paper Makers, both A. F. of L. affiliates. The contract was negotiated by W. B. Clements, vice-president and general manager.

Old employees are given thirty days to join the union, and new employees will have sixty days. Under the agreement, men on the paper machines will work daily shifts of six hours on six days a week. Day workers will have an eight-hour day and five day week, unless heavy demands on the company necessitate their working overtime. Wages were not discussed in the agreement, but are to be considered within a week or ten days.

Conquering River Pollution

River pollution by industrial wastes, a problem confronting the paper mills for the last ten years, is almost conquered, according to a summary of activities just completed by L. F. Warrick, chief sanitary engineer of the Wisconsin State Board of Health at Madison, Wis.

Mr. Warrick points to the expenditure of approximately $500,000 by the Marathon Paper Mills Company, Rothschild, Wis., for a reclamation plant for sulphite liquors, as one of the notable achievements. The equipment includes the salvaging of chemicals for commercial purposes. This method of sulphite disposal, says Mr. Warrick, seems to be economically feasible and practical from a health standpoint. He also points out that the paper industry already has spent upwards of $2,000,000 on the problem of eliminating industrial waste pollution, but the sulphite waste fluid, until this year, seemed a problem impossible to solve. More than 1,000 patents are on file at the United States Forest Products Laboratory at Madison, Wis., for plans to reclaim or treat this by-product of the paper mills, but none of them is economically practical.

Another important step is the erection of sewage disposal plants in every city and village throughout the Fox River Valley, representing aggregate outlays of approximately $5,000,000. The goal for accomplishment was set for 1940, but Mr. Warrick believes the plants will all be completed and operating by the end of 1937. Industrial waste will be given primary treatment along with domestic sewage, leaving the river almost entirely free from pollution in the future.

Paper Mills Resume Operations

Operations were resumed Monday of this week by the Gilbert Paper Company, Edgewater Paper Company and the George A. Whiting Paper Company, all of Menasha, Wis. All three plants were shut down for a week to give the employees a vacation, and for making repairs.

Plant 2,008 Acres of Private Forests

Pulp and paper manufacturers of Wisconsin planted 2,008 acres of private forests in 1936 to insure a future supply of raw materials, a larger amount than the industrial planting in any other state, according to the United States Forest Service. The largest plantings were made by the Nekoosa-Edwards Paper Company, Nekoosa, Wis., and the total also was large for the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis.

Plantings in Wisconsin this spring exceeded 25,000,000 trees, according to F. B. Trenk, U. S. forester. They were used to replenish national, state and county forests, and also for shelter belts. Plantings included a large amount of Norway, Scotch, jack and white pines.

Marinette county, adjacent to an extensive paper manufacturing section, leads in the amount of county forests maintained. It now has 194,000 acres on its rolls, 20,000 acres more than any other county in Wisconsin. A large section of this acreage is along the Peshtigo River, where the Badger Paper Mills, Inc., is located.

Thilmany Hauls Pulpwood

Pulpwood is being hauled by barge from Green Bay, Wis., to the Thilmany Pulp and Paper Company, Kaukauna, Wis., using equipment of the Fox River Navigation Company. The wood was brought to the docks at Green Bay from Port Arthur, Canada, by the steamer Eastling. About a week will be required to transfer this cargo, and the tugs and barges then will return to their movement of coal from Green Bay to Fox River Valley mills.

J. M. Conway to be General Chairman

Green Bay, Wis., will entertain the 1938 meeting of the Fox River Valley and Lake Shore Safety Conference. J. M. Conway, president and general manager of the Hoberg Paper Mills, Inc., Green Bay, will be the general chairman of the convention. The meeting will be held in May.

Lewis F. Nelson Elected Mayor

Lewis F. Nelson, president and general manager of the Badger Tissue Mills, Kaukauna, Wis., has been elected mayor of the city. He was a candidate against Mayor John H. Niesen in a recall election, and carried every ward in the city. He previously served a term as alderman, was on the board of education for 25 years, and now is president of the Outagamie County Normal School. He will serve until April, 1938.

Transfer of Forest Service Threatened

WASHINGTON, D. C., July 13, 1937 — That the transfer by executive order of the Forest Service to the Department of the Interior would not only be made possible under the provisions of Senate Bill 2700 on reorganization, but that there are definite indications that this move is intended, in the opinion of the Society of American Foresters, was stated today by H. H. Chapman, president.

In the original draft of this bill the following clause was included:

"(b) Nothing in subsection (a) shall be construed to authorize the President . . . . . (3) to transfer to any other agency any of the functions exercised by the Forest Service in administering any law relating to national forests, or any of the functions exercised by the Engineer Corps of the Army or the Mississippi River Commission in administering any laws relating to rivers and harbors or flood control."

In the printed version appearing on June 23, the clause exempting the Forest Service was deliberately omitted and the bill now reads:

"(b) Nothing in subsection (a) shall be construed to authorize the President . . . . . (5) to abolish or transfer to any other agency any of the functions exercised by the Engineer Corps of the Army or the Mississippi River Commission in administering any laws relating to rivers and harbors or flood control."

The reasons for this change may be tied in closely to certain testimony submitted at the public hearing on June 4 on a bill concerning the Oregon and California Land Grant, by Rufus Poole, Solicitor for the Department of the Interior, who proposed a written amendment to that bill which read:

"The Forest Service and all functions thereof, together with its personnel, records, files, supplies, office furniture, equipment and property of every kind, unexpended balances of appropriations, and all allotments in the District of Columbia or elsewhere are transferred from the Department of Agriculture to the Department of the Interior; and all duties, power, and authority now vested by law in the Secretary of Agriculture, performed, executed, or exercised by him, through or in the administration of the Forest Service, are transferred to the Secretary of the Interior."

Commenting on this proposed bill, Mr. Poole told the committee that he believes it to be in furtherance and not in derogation of the President's reorganization recommendations.

The purpose of the Department of the Interior to secure the transfer of the Forest Service has long been evident and there can no longer be a doubt as to what would happen unless the exempting clause which would prevent such a transfer is restored to this bill to accompany the clause exempting the work of the Engineer Corps of the Army and the Mississippi River Commission in administering laws relating to rivers and harbors or flood control, which clauses were retained.

The work of the Forest Service in preventing and restoring both public and private forests is an indispensable part of the great program of soil conservation conducted by the United States Department of Agriculture. It cannot be torn from its natural association with other parts of this program without definite and permanent damage to the future welfare of every citizen.

Tomahawk Kraft Elects Officers

At the annual meeting of the stockholders of the Tomahawk Kraft Paper Company, Tomahawk, Wis., the following officers were elected for the ensuing year: A. L. Kreutzer, president; S. B. Bugge, vice-president and general manager; J. H. Cowhill, vice-president in charge of sales; D. C. Everest, secretary-treasurer; and H. L. Fitze, assistant secretary-treasurer.

It was reported at the meeting that the company for the fiscal year ending May 31 showed a net profit after depreciation, interest and taxes of $168,735, equal to $4.00 on stock outstanding.

Maine Paper Mills Give Boost in Pay

[FROM OUR REGULAR CORRESPONDENT]

WESTBROOK, Me., July 12, 1937.—Employees of the S. D. Warren Company paper mills at Westbrook and Gardiner will receive a 10 per cent increase in wages, beginning Monday, the company announced last week. It will be the second 10 per cent increase for the more than 2000 employees within the past six months.

With the new increase John E. Hyde, vice president, said, wages will be higher than during the peak business year of 1929.

Spotty Conditions Eliminated in Chicago

Ground Wood Papers, Kraft and Newsprint Show Increased Activity — Gibralter Paper Co. Expansion Arouses Interest — Western Paper Merchants To Close Saturdays — Marseilles Mill Is To Be Enlarged.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 12, 1937—The Chicago paper market sweltered in a July heat wave during most of the past week but still reported a steady improvement with sufficient underlying strength to virtually assure a material upturn in early fall. The most interesting characteristic of the general market was the gradual elimination of spottiness which had been evident during the past few weeks. Reporting even better business than the week before were groundwood, kraft and newsprint headquarters who obviously found the going much to their liking. Fine paper markets were steady and orders were more numerous and in slightly increased quantities. Buying obviously against further material price increases expected in the fall was also registered. Book and cover papers had a good week marketwise with the latter reporting a particularly good six days period. The board market was steady though consumption was not as outstanding as earlier in the summer months. Waste papers were hesitant in responding to market conditions.

Gibralter Plans Expansion

Chicago paper circles are interested in the news that the Gibralter Paper Company has been sufficiently successful in its program to market job-lots and "seconds" that it plans to soon open an office in Indianapolis. Although there are no particulars concerning who will be the manager of the Indianapolis branch it is expected that certain of the dozen salesmen now working out of the Chicago headquarters will be sent to the Indiana city to at least start the development of the business there. The Gibralter organization, made up of ten well known and highly reputable Chicago jobbing concerns, created a great deal of interest some months ago when it organized to perfect the marketing of "seconds" and job-lots. Plans for expansion would indicate that the company has solved the "seconds" problem and that the venture into stabilization of these markets has been somewhat more successful than perhaps was anticipated. Duke Bachrach is president of the Gibralter Paper Company while executives of well known Chicago paper firms are represented on the Board.

To Close Saturdays

The Western Paper Merchants Association has announced that its Chicago members will close on all Saturdays from July 3 to and including September 4. The announcement states "to enable their employees to have more useful and enjoyable week-ends during the summer hot weather . . . In order that their service to you may not be impaired it is requested and desired that you will place orders for your requirements in time for Friday deliveries." Cooperating firms are Berkshire Papers, Bermingham & Prosser, Blunden-Lyon Company, Bradner-Smith & Co., J. W. Butler Paper Company, Chicago Paper Company, Dwight Brothers Paper Company, Empire Paper Company, Fort Dearborn Paper Company, Great Lakes Paper Company, Hobart Paper Company, La-Salle Paper Company, Marquette Paper Company, Messinger Paper Company, Moser Paper Company, Murnane Paper Company, Parker, Thomas & Tucker Paper Company, Sabin Robbins Paper Company, Seaman Paper Company, Swigart Paper Company, Whitaker Paper Company and the James White Paper Company.

Marseilles Mill to Expand

From Marseilles, Ill., comes news that the board mill of the National Biscuit Company located in that city is to be expanded and provided with new equipment costing approximately $1,000,000. A new 175 ton Board machine is included in the program which will feature addition in production space as well.

Hyfect is Introduced

Through the Midland Paper Company, division of the Zellerbach Paper Company, comes the introduction of "Hyfect," the new all-purpose book paper manufactured by the Kimberly-Clark Corporation. Four color processes and black and white half tones are utilized to illustrate the adaptability of the paper which is reported as featuring elimination of wire marks and perfecting constant quality in color, opacity, strength, ink affinity and all-round "printability." The mailing describing Hyfect is printed on Hyfect Super, 25 x 38-70 pound basis.

Irving McHenry Tours Europe

Irving McHenry, president of the Mid-States Gummed Paper Company, was an Illinois delegate at the meetings of the International Chamber of Commerce held in Berlin June 28 to July 3. Mr. McHenry left Chicago on June 19 for a nine weeks tour of Europe. Accompanied by his wife and son, the Chicago executive will visit seven European countries before he returns.

Salesmen Hold Golf Tournament

The golf tournament of the Salesmens Association of the Paper Industry was held June 17 at the Fresh Meadow Country Club in Long Island, which is one of the most outstanding golf clubs in the East. All the members of the association unanimously agreed that "a good time was had by all." About thirty members attended, and with perfect golf weather, some excellent scores were posted. Prizes were awarded after golfing appetites were appeased by a delicious dinner and plenty of refreshments. For his low gross score of 85, Ed. Vaughn received a cocktail shaker and glasses, which were put to immediate use. M. B. Lowe of the Lowe Paper Company won a beautifully fitted traveling kit for his low net score of 73. All arrangements for the day at Fresh Meadow were made through the courtesy of Harry E. Gould, president of the Aldine Paper Company, who will be glad to arrange for the use of the course by any association in the industry.

Work on Comeau Bay Newsprint Mill at Peak

Approximately 5,000 Men Now At Work on Operations—Present Prospects Point to Opening of Plant on Scheduled Time Which Is Less Than A Year From Now — Reorganization Will Yield Revenue of $600,000.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 12, 1937.—A despatch this week from Comeau Bay, Que., states that the season's operations there are now at their peak on the construction of the newsprint mill, power plant and model town for the Ontario Paper Company. Around 5000 men are at work on the various operations, and prospects are good for the opening of the mill on schedule time in less than twelve months from now.

Among the construction work in hand is a community building to house a theatre, bowling alleys, shops and offices; also being constructed is a modern department store, a refrigerating plant and more than 50 new residences.

From Comeau to Ontardes the highway is now being completed, and at the power site the 60,000 h.p. plant is nearing completion and will be ready to go into operation in October or November. Streets, water lines, sewers and other community services are now almost completed.

Important to Comeau Bay, as "the future metropolis of the Gulf of the St. Lawrence" is the provincial highway, which now goes as far as Port Neuf. This highway, when completed, will lead into one of the finest undeveloped tourist districts in Quebec Province, and will also serve as a connecting link between Comeau Bay and the rest of the province. At present the only method of reaching Comeau Bay is by plane or by steamer from Rimouski across the gulf.

Wages of Forestry Workers

It is estimated by Quebec government officials that the reorganization of the Department of Lands and Forests, now underway, will result in additional revenue to the extent of some $600,000 a year, due to more efficiency in the carrying out of regulations covering the cutting of timber. By a recent Order-in-Council a minimum wage of $45 per 26-day month for men in the shanties has been fixed, with a maximum of 60 hours a week. If a man works more than 60 hours a week he will be paid time and a quarter. The intention is to bring Sunday work to the bare requirements. Young men under the age of 18 may not work in the shanties. As regards young men of from 18 to 20, and men incapacitated because of infirmity or age, but whom the companies wish to employ, the Government has decided to allow a lesser monthly rate, but to apply only to 10 per cent. of staffs. The rate as regards these 10 per cent. categories will be $30 a month. The object is to permit some people who otherwise could not qualify, since they cannot do a full day's work, to obtain employment.

As regards those who work on a contract basis, the government has decided on a minimum rate of $2 per cord of 128 cubic feet, with an additional $1 per cord for peeling. For popular and "steeped" woods, the rate will be $1.75 per cord, plus the additional $1 per cord for peeling, and the decision will favor the worker as regards apparent cords and solid cords.

These decisions are now in effect, having been made retroactive since May 1st last, though they will obviously apply mostly in the winter months when the cutting is done.

As regards men who cut wood for a company, or a contractor, on a contract basis, provision is made that they may not be charged more than 60 cents per day for room and board. The Government will set the rates at which equipment may be charged by companies to those who work on a contract basis, and the arrangement will also work out that the workman engaged in contract work must obtain at least $45 a month, and in that way will not be in an inferior position to the month by month laborer.

Koroseal Paper

The most recent use developed for Koroseal, a synthetic elastic developed by the laboratories of The B. F. Goodrich Company, is its application to paper. This paper consists of a thin coating of pure Koroseal applied with strong adhesion to one side of a high-grade 40 lb. kraft paper. It is suitable for any service where a waterproof, oilproof, greaseproof, airtight or sanitary paper is required.

Because Koroseal is odorless, non-toxic and non-tainting, this paper can be used in contact with foodstuffs, medicines and other chemicals without fear of contamination. The Koroseal coating will flex as long as the paper and will not crack. Addition of this tough film increases the tear resistance of the paper. Koroseal is less inflammable than the paper to which it is attached; is not affected by sunlight and will not oxidize.

Attaching Koroseal paper is accomplished by simply gluing or pasting the uncoated side of the sheet to the desired surface. The Koroseal coating will not adhere to other surfaces but will form a strong bond with itself when pressed under a temperature of 390 degs.

Koroseal paper is recommended for packaging foodstuffs, chemicals, medicinals, oils, etc., and can be used for making gaskets, shields and flower pots or as a covering for heat insulation to exclude moisture. It has an overall thickness of .006 to .0065 inch; weighs .308 pounds per lineal yard and is available in rolls 200 yds. long and 40 inches wide.

Show Corroflex in Window Display

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 12, 1937—Carter, Rice & Co., Corporation, have arranged a very interesting and constructive window display, covering Corroflex, the new cushion wrapper. Corroflex, the one-sheet wrapper, possesses the unusual qualities of cushion, flexibility, strength and attractiveness. Carter, Rice & Co., Corporation, are the exclusive distributors in this territory for Corroflex.

Financial News of Pulp and Paper Industry

Johns-Manville Corp. Expected To Show Earnings of Approximately $1.75 a Share On Common Stock—Paul V. Cary, Trustee, Patten Paper Co. Gives Notice He Has Applied For Order To Wind Up Business.

New York Stock Exchange

High, Low and Last for the Week Ending July 14, 1937

	High	Low	Last
A. P. W. Paper Co.	7¼	7¼	7¼
Armstrong Cork Co.	58½	54⅜	55¼
Celotex Corp.	43¾	42	42
Celotex Corp., pf.	78	76	78
Certain-Teed Products Corp.	15	14	14½
Certain-Teed Products Corp., pf.	56½	55½	56½
Champion Paper & Fibre Co.	60	59¼	59½
Champion Paper & Fibre Co., pf.	108¾	107	108
Congoleum Nairn Co.	38¾	36⅞	37
Container Corp. of Amer.	31⅞	29¾	31½
Continental-Diamond Fibre Co.	20½	20	20
Crown Zellerbach Co.	19½	18⅞	18⅞
Crown Zellerbach Co., cum. pf.	99½	99	99
Flintkote Co.	30¾	29½	29½
International Paper & Power (a)	18¾	17	17¼
International Paper & Power (b)	13¾	12⅞	12⅞
International Paper & Power (c)	7	6⅝	6¾
International Paper & Power, pf.	103½	101½	102
Johns-Manville Corp.	130	127	130
Johns-Manville Corp., pf.	123¾	123¼	123¾
Kimberly-Clark Corp.	38½	37¼	38½
MacAndrews & Forbes	31¼	30¾	31¼
Masonite Corp.	57	55½	56½
Mead Corp.	31	30	30
Mead Corp., pf.	96¼	96¼	96½
Paraffine Companies, Inc.	70	65½	70
Paraffine Companies, Inc., pf.	100	99½	100
Scott Paper Co.	40¾	39½	40¼
Sutherland Paper Co.	34	32½	34
Union Bag & Paper Corp.	82	78	82
United Paperboard Co.	11	10½	10⅝
U. S. Gypsum Co.	117½	115	116
U. S. Gypsum Co., pf.	162	161	161

New York Curb Exchange

High, Low and Last for the Week Ending July 14, 1937

	High	Low	Last
American Box Board Co.	19¾	19½	19⅝
Brown Co., pf.	79¼	76	77
Great Northern Paper Co.	40¾	39⅝	40¼
St. Regis Paper Co.	8¾	8⅛	8⅜
Taggart Corp.	11⅜	10⅝	11⅜

Johns-Manville Net To Increase

Johns-Manville Corporation is expected to show earnings for the second quarter of around $1.75 a share on the common stock, according to sources close to the company. In the first quarter the net was equal to $1.05 on the common and in the second quarter last year the net was equal to 1.56 on 100,000 fewer common shares.

For the first half year sales are expected to have been 25 and 30 per cent higher than for the same period in 1936. If sales continue at the same rate it is probable that the 1937 figure will closely approach the 1929 peak of $62,000,000.

The corporation's sales for the first quarter were slightly better than $13,000,000 as compared with around $8,500,000 for the first quarter in 1936. Last year's sales were reduced because of a price war. No such condition has obtained this year and sales for the second quarter are believed to have been around $14,000,000. This would indicate a net for stockholders of around $1,500,000 as compared with $1,298,137 for the corresponding period in 1936.

It is believed probable that the company will follow the dividend policy of last year in so far as the declaration of extras above the normal payments. The company has paid 75 cents in March and 75 cents in June as compared with 50 cents in each of these periods last year. Last September Johns-Manville paid the usual 50 cents and 50 cents extra and in December the regular rate was raised to 75 cents and $1 extra was paid.

Patten Hearing Set for July 17

APPLETON, Wis., July 12, 1937—Notice has been issued to the creditors of the Patten Paper Company, Ltd., Appleton, Wis., by Paul V. Cary, trustee in proceedings for the reorganization under Section 77B of the United States Bankruptcy Act, that he has made application for an order authorizing him to wind up the debtor's business, and directing the liquidation of the debtor's estate, "all under such conditions as the court shall impose." A hearing is to be held on the trustee's application in the Eastern Wisconsin District of the United States court at the Federal Building, Milwaukee, July 17.

A plan of reorganization had been drafted, which was filed with the court and submitted to the creditors for approval, objection or amendment. Notice was previously issued that the hearing at Milwaukee would be on the granting of authority to the trustee to proceed under the refinancing plan.

Earnings of Firm Down

Report of Canadian Wallpaper Manufacturers for the fiscal year just closed shows profit of 94 cents a share on the combined "A" and "B" stock, compared with $1.68 for the previous year. President George A. Orme states that profits were adversely affected by rising costs of raw materials, and the removal of Staunton's Ltd. to the new factory at Leaside, near Toronto. This transfer interfered somewhat with the subsidiary company's trading operations. Net profits for the current year amounted to $122,103, after all charges, including $43,822, plant and machinery written off on removal of the subsidiary company. This compares with net of $217,839 for the previous year. Directors recommend payment of dividend of $1 a share.

Waste Paper Burns at Haverhill

HAVERHILL, Mass., July 12, 1937.—Caused by spontaneous combustion, a fire broke out last Tuesday in a storage yard of the Haverhill Boxboard Company, containing 3,000 tons of waste paper. The fire has been burning several days, despite a 34-hour drenching by the fire department. Firemen worked in four-hour shifts, tearing open the bales to reach the fire and trying to remove thousands of them. Several were overcome by the heat and were compelled to give up. Fire Chief Rufus Crittenden declared it the worst fire of its kind he had seen in his 40 years with the department. Damage is estimated at $10,000.

Sidney Roofing Co. to Expand

VANCOUVER, B. C., July 10, 1937—Contract has been let for construction of an addition to the paper manufacturing plant at Victoria, B. C., of the Sidney Roofing and Paper Company. Measuring 156 feet by 32 feet and resting on a concrete foundation, the building will cost approximately $5,700 to construct.

Preliminary Program of Tappi Fall Meeting

The Fall Meeting of the Technical Association of the Pulp and Paper Industry will be held in Savannah, Ga., October 18-21 inclusive. Registration and all meetings will be held in the rooms of the Hotel DeSoto. Social events in town will be held in the ballroom and other rooms of that hotel.

Technical Program

The technical program will be split into three meetings held in the mornings of the 18th, 19th and 20th as follows:

Monday A.M. Papers on forest management and economics. Tuesday A.M. Papers on pulping developments. Wednesday A.M. Papers on paper manufacture.

Following the technical sessions on Monday and Tuesday there will be general TAPPI luncheons. On Monday a speaker has been engaged to speak on "Forestry Problems in the South." On Tuesday the luncheon speaker will recount briefly the "History of the Paper Industry in the South."

A TYPICAL SCENE ALONG THE STRAND AT SAVANNAH BEACH REACHED FROM SAVANNAH OVER PAVED ROAD PASSING THROUGH WHAT IS SAID TO BE THE LONGEST AVENUE OF PALMS IN THE WORLD.

Woods and Mill Visits

Monday and Tuesday afternoons have been set aside for official woods and mill visits. Monday afternoon members of TAPPI, guests and ladies will be taken to Palmetto Bluff, S. C. where pulpwood and turpentine operations may be inspected. On Tuesday afternoon The Union Bag and Paper Corporation's mill and the Pulp and Paper Laboratory of Savannah will hold open house.

Visit to Hercules Powder Company Plant

Following the official program, arrangements have been made to visit on Thursday morning the Hercules Naval Stores plant at Brunswick, Georgia. After the inspection of the plant luncheon will be served at the Cloisters at Sea Island Beach. Golf, swimming and tennis facilities will be available after the luncheon. Thursday's program is to be arranged through the courtesy of the Hercules Powder Company.

On Friday the delegates have been invited to the Slash Pine Forest Festival at Waycross, Ga. This will be an opportunity to see more of the southern pine forests and to inspect forest operations in the slash pine district.

Opportunities to visit pulpwood operations, turpentine operations, and some of the new kraft mills in the South will be announced later.

A TYPICAL SCENE ON ONE OF SAVANNAH'S MANY GOLF COURSES. ALL COURSES HAVE BEAUTIFUL FAIRWAYS AND EXCELLENTLY KEPT GRASS GREENS.

Social Program

The City of Savannah and the TAPPI Convention Committee are arranging an extended social program which will provide delegates and ladies with opportunities for relaxation and amusement.

The first planned social activity will follow the woods visit to Palmetto Bluff on Monday afternoon. Guests at Palmetto Bluff will be picked up there by the Steamer Clivedon and returned by via the inland waterway to Savannah. Entertainment and refreshments will be provided on board the steamer. Following the return to the city there will be an informal reception at the Hotel DeSoto, followed by a formal banquet and ball in the main ballroom of the hotel. The City of Savannah will be the host on this occasion.

On Tuesday, TAPPI has planned a costume dinner-dance at the DeSoto Hotel. The affair will be in the form of an old-fashioned crinoline party. The committee has asked us to state that no one is to worry about costumes, etc. From the guests' standpoint the party will be entirely extemporaneous.

Wednesday, immediately following the Technical Session delegates, guests and ladies will be transported to Savannah Beach on Tybee Island. The Chatham County Commissioners have arranged an oyster-roast and an afternoon's entertainment for the TAPPI guests. Those who have enjoyed the hospitality of this group will anticipate this affair with real pleasure.

Registration

Registration will begin at the Hotel DeSoto Sunday, the 17, and continue through the 20th. Those wishing to register early may do so through Mr. H. Bradley Johnson, P. O. Box 703, Savannah, Ga.

For general information regarding the convention address D. G. Moon, chairman the Convention Committee, P. O. Box 703, Savannah, Ga.

For Specific information regarding special phases of the convention address the chairmen of the various committees.

Convention Committees

D. G. Moon, General Chairman; John T. Gamble, Vice Chairman; Charles Carpenter, Vice Chairman.
Arrangements, W. F. Allen.
Registration, H. Bradley Johnson.
Publicity and Printing, Thos. R. Jones.
Finance and Accounting, G. T. Wegner.
Transportation, J. K. Copps.
Mill Visits, E. H. Mayo.
Program, O. W. A. Rodowski.
TAPPI Ladies' Committee, Mrs. D. G. Moon.
TAPPI Entertainment Committee, A. G. Ready.
Crinoline Party, L. D. Smiley.
Golf, P. F. McMahon.
Secretary, Miss Rita Wood.
Local Reception and Entertainment Committee, Judge and Mrs. Gordon Saussy.

Advisory Committee, Alexander Calder, chairman, President, Union Bag and Paper Corporation; Jas. H. Allen, Vice President, Union Bag and Paper Corporation; E. George Butler, Vice-Chairman, Industrial Committee of Savannah, Inc.; Robert Fechner, Director, Civilian Conservation Corps; Howard C. Foss, Chairman, Industrial Committee of Savannah, Inc.; Robert W. Groves, President, Savannah Port Authority; Chas. H. Herty, Director, Pulp and Paper Laboratory; Robert M. Hitch, Mayor, City of Savannah; J. P. Houlihan, chairman, Chatham County Commissioners; Herschel V. Jenkins, President, Savannah Morning News and Evening Press; William Murphey, President, Citizens and Southern National Bank; J. Cheshire Nash, President, Columbia Naval Stores Company; Benj. O. Sprague, President, Savannah Sugar Refining Corporation; Wm. G. Sutlive, President, Chamber of Commerce; T. Guy Woolford, President, Georgia Forestry Association.

Ladies' Program

A program for the ladies has been arranged which promises to provide opportunity for entertainment and relaxation at the same time pointing out interesting and beautiful features of Savannah and of the coast region of the Deep South.

Monday:—In the morning a swimming party and informal get-together has been planned. This will be in the famous Hotel DeSoto court and garden. Luncheon will be served in the same surroundings. In the afternoon the ladies will join the men in the trip to Palmetto Bluff. Monday evening's entertainment will consist of the banquet and the ball mentioned before.

Tuesday:—In the morning the ladies will motor to the Savannah Golf Club. Bridge and golf, followed by luncheon and a fashion show have been arranged. In the afternoon, there will be sightseeing and plantation visits around Savannah. The afternoon's program will wind up with tea at one of the plantations. The evening's program will be the crinoline party.

Wednesday morning will provide opportunities for shopping and sightseeing in Savannah itself. At noon the ladies' party will join the men for the oyster-roast and visit to Savannah Beach.

Hotels

The Hotel DeSoto, famous for its hospitality and southern atmosphere will be, as has been mentioned, official headquarters for the meeting. Rates at the Hotel DeSoto are from $2.50, single with bath; from $5, double and bath. Reservations will be accepted now through Chas. G. Day, manager.

At the nearby Savannah Hotel the rates are from $2.50, single with bath; from $4, double with bath; Andrew A. Smith, vice president and manager.

Sport and Recreational Facilities

For those who wish to play golf, fish, swim or play tennis, there are numerous facilities for these sports in and around Savannah.

Two municipal golf courses, the Savannah Golf Club and the Oglethorpe Hotel golf courses provide opportunities for those who wish to follow this sport. Tennis courts will be available at the Savannah Golf Club, and at Daffin Park. For those members who fish, the salt waters and fresh waters around Savannah provide opportunities for all kinds of fishing. From Wilmington Island, Isle of Hope and Thunderbolt boats may be hired for salt-water fishing. Tybee and the jetties provide surf and sheepshead fishing. There is fresh-water swimming in the Hotel DeSoto pool and in the Municipal Pool at Daffin Park. Savannah Beach on Tybee Island is one of Georgia's surf-bathing places.

Points of Interest in and About Savannah

Close to and in Savannah are found many points of interest which may be easily reached by motor. Among these are the beautiful Wormsloe Gardens. Wormsloe is the DeRenne Plantation established about 1733. It is located a few miles from Savannah over one of the salt-water creeks which interlace Georgia's coast. It is famous for its flowering azaleas, magnolias and moss-covered live-oaks. At Thunderbolt is the Bonaventure Cemetery. Bonaventure is noted for its great oak trees. Close to downtown Savannah is the Colonial Cemetery. This is now a shrine of the Daughters of the American Revolution. Here are buried the earliest citizens of Savannah.

Savannah is the world's largest naval stores market. Close to the city, on the Savannah River, are acres of naval stores awaiting shipment. Savannah

is also the site of the first post-depression kraft mill. Just outside of the city, the Union Bag & Paper Corporation has constructed at the old Hermitage Plantation, one of the large new sulphate pulp and bag factories. At Savannah, also, is the Pulp and Paper Laboratory of which Chas. H. Herty is director. Here, for the last five years experiments have been conducted to demonstrate the suitability of young southern pine for newsprint and sulphite pulps.

Transportation

Savannah may be reached by both rail and water. The Atlantic Coast Line and Seaboard Air Line railways give de luxe service directly from New York. The Central of Georgia, Southern, and the Savannah and Atlanta all connecting with the Louisville and Nashville enter the city from the West.

The Merchants and Miners Transportation Company has sailings from Boston, Philadelphia and Baltimore. Sailing dates will be announced later. The Ocean Steamship Company has a three-day service from New York City.

It is expected that the Savannah Convention will present a new high mark in interest and value among the now famous TAPPI fall meetings. Anyone may attend.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 14, 1937 — The R. P. Andrews Paper Company has been awarded the contract for furnishing 186,850 pounds (3,100,000 sheets) of 21 x 32 and 32 x 42 white and salmon sulphite writing paper at 6.4 cents per pound, bids for which were received on June 25.

The Andrews Company will also furnish 34,500 pounds (300,000 sheets) of 32 x 42 blue sulphite writing paper at 7.16 cents per pound. The National Pulp and Paper Company will furnish 250,000 pounds of newsprint paper in 48 inch rolls at 2.5 cents per pound and the Marquette Paper Company will furnish 150,000 pounds of M. F. book paper in 38 inch rolls at 6.125 cents. Bids for all of these items were received on June 23.

Reese & Reese, Inc., will furnish 24,650 pounds (150,000 sheets) of 75 per cent rag lithograph finish map paper at 13.61 cents per pound.

The Enterprise Paper Company will furnish 28,000 pounds (100,000 sheets) of 22½ x 28½ tag board at 7.487 cents per pound, bids for which were received on June 28.

The Printing Office has received the following bids for 5,000 sheets of red railroad board; Virginia Paper Company, $30.55 per M sheets; Barton, Duer & Koch Paper Company, $29.88; Reese & Reese, Inc., $30.55; Whitaker Paper Company, $30.55; L. Hyman & Sons, $30.24; Old Dominion Paper Company, $30.54; Dobler & Mudge, $30.49; Mathers-Lamm Paper Company, $28.60; and Walker, Goulard Plehn Company, $30.55.

For 5,000 pounds of No. 1 gummed kraft paper; R. P. Andrews Paper Company, 11.97 cents; Barton, Duer & Koch Paper Company, 11 cents; Virginia Paper Company, 11.5 cents; Cauthorne Paper Company, 10.98 cents; Enterprise Paper Company, 9.555 cents less 1 per cent; Reese & Reese, Inc., 10.5 cents; Mathers-Lamm Paper Company, 9.75 cents; Walker, Goulard Plehn Company, 11.25 cents less 2 per cent; Resolute Paper Company, 9.75 cents less 2 per cent; and Stanford Paper Company, 5.1 cents.

For 38,420 pounds (170,000 sheets) 50 per cent rag, white index paper; Aetna Paper Company, 12.788 cents; Marquette Paper Company, 12.47 cents; Stanford Paper Company, 14.999 cents; Walker, Goulard Plehn Company, 14.5 cents; R. P. Andrews Paper Company, 14.5 cents; Mathers-Lamm Paper Company, 14.45 cents; Barton, Duer & Koch Paper Company, 14.83 cents; Reese & Reese, Inc., 14.12 cents; Whitaker Paper Company, 15 cents; and Dobler & Mudge, 14.5 cents.

For 1,000 sheets, 100 per cent rag, 28 x 40 heavyweight mounting board; Barton, Duer & Koch Paper Company, $716.80; Mathers-Lamm Paper Company, $406.00; Charles G. Stott & Company, $496.80; George F. Muth & Co., Inc., $430.60; and Whitaker Paper Company, $430.00.

For 5,000 sheets, 100 per cent rag, light weight 14 x 18 mounting board; Barton, Duer & Koch Paper Company, $78.00 per M sheets; Mathers-Lamm Paper Company, $44.60 and $75.40; Charles G. Stott & Co., $51.18 and $86.88; George F. Muth & Co., Inc., $46.91 and $79.64; and Whitaker Paper Company, $44.78 and $76.02.

For 6,600 pounds (33,000 sheets) of 100 per cent rag, white ledger paper; Mount Holly Paper Company, 24.5 cents; Mudge Paper Company, 25 cents; Walker, Goulard, Plehn Company, Inc., 28 cents; Barton, Duer & Koch Paper Company, 22.72 cents; R. P. Andrews Paper Company, 27.5 cents; Old Dominion Paper Company, 25.958 cents; Graham Paper Company, 27.5 cents; and Virginia Paper Company, 25 cents.

Marvellum Puts Out New Coverings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 12, 1937—The Marvellum Company, Holyoke, Mass., of which Henry L. Goodman is a New England representative, has issued four new books of attractive box coverings. Book No. 727 contains Silvergloss Papers, in Ribbon and Tweed Designs, in white, buff, lavender, light green, light blue, pink, red, dark green, dark blue and black. Book No. 733, Rayon Papers—Holly Pattern, includes scarlet, white, light buff, light gray, light green, light blue, lavender, pink, light turquoise, Nile green and dark blue. Book No. 742, Modern Candle Christmas Papers, contains a swatch of dark blue, white, silvergloss, scarlet, wood brown, bluebonnet, emerald and golf blue. Book No. 743, Colonial Christmas Papers, comprises green, light buff, blue, ivory, scarlet, dark blue, white and silver. All papers are basis 20 x 26 in 26 inch rolls.

Dobeckmun Co. Buys Plant

The Dobeckmun Company of Cleveland, manufacturers of cellophane products, announced last week that it had purchased from the Crown Zellerbach Corporation the properties of the Western Shellmar Products Company of Oakland, Cal., and will operate them as a Pacific Coast branch factory. The purchase will add about 20 per cent to the volume of business of the Dobeckmun Company and places it in a position to expand and speed up its service to the Pacific Coast and Rocky Mountain markets.

Eastern States Association Grows

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 12, 1937—The Eastern States Paper and Bag Distributors Association, organized last February, is beginning to shape into one of the largest trade groups of its kind in the country. Meetings have been held in Boston, Mass., New Haven, Conn., and plans are being made for a meeting to be held during the next few weeks in Washington, D. C. The Washington group is headed by J. N. Freedman of S. Freedman & Sons.

Arthur H. Lewis, executive secretary of the association has this to say regarding the meetings of the divisional groups of the Association which have been thus far held: "The New England Division is making some real progress in its campaign to eliminate the use of paper and particularly paper bags as instruments of 'loss leader selling.' Its organization has only recently been completed and much of its work is still in the planning stage. The members know the problems they have to deal with and they contemplate work which will bring together the smaller wrapping paper dealers into an effective organization with which the larger paper merchants who do a sizable industrial business, will also be affiliated. The New England Division has able officers in Harry J. Dowd as president, Willard Loud as treasurer, and John C. Hurd as secretary."

At a subsequent meeting of the Connecticut Paper Merchants' Association, more than fifty Connecticut paper merchants and their salesmen attended a joint 'get-together' held at the Hotel Garde, New Haven, where they heard short talks on market conditions by L. Ransom of the Union Bag and Paper Corporation, and Arthur H. Lewis, executive secretary of the association.

The meeting was presided over by William Wieler of the A. L. Schneider Company, New Haven, chairman of the Connecticut Paper Merchants' Association, a division of the Eastern organization.

Mr. Ransom discussed the bag industry and the relations between manufacturer, merchant and consumer. He explained how bags were made and pointed out better merchandising ideas for the sale of this product. In referring to trade associations, he pointed out how these voluntary groups are advantageous not only to the employer but to the employee as well.

Mr. Lewis detailed all recent developments of the Eastern States Association and explained the relation between this organization and the paper salesman. He declared—"If this organization can be of advantage to the jobber, it will in turn be of importance to the jobber's salesman, because the latter cannot improve his position until the former has."

Some of the houses represented at the meeting were: New England Bag and Paper Company, New Haven; Standard Paper Company, Waterbury; P. Garvan, Inc., Hartford; Dumouchel Paper Company, Waterbury; Brass City Paper Company, Waterbury; Nathan Schwarz & Son, Bridgeport; Danbury Paper Company, Danbury; Star Paper Company, Inc., New Haven; Hudson Paper Company, Stamford; Middlesex Bag and Paper Company, Middletown; Minotte E. Chatfield Company, New Haven.

After brief addresses by the jobbers and responses on the part of the salesmen, in which keen interest was exhibited, plans were presented for furthering the interest of the association in other states along the eastern seaboard.

Howell Howard Fatally Injured

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 12, 1937—Howell Howard, son of Maxwell Howard, paper manufacturer and sportsman, who died Friday at Mineola, New York, of injuries suffered the previous day in a polo game at the Meadow Brook Club, was one of the most promising young business men in the Miami Valley.

He was treasurer of the Aetna Paper Company in this city and served in a similar capacity with the Maxwell Paper Company in Franklin, 17 miles south of Dayton, and as secretary of the Howard Paper Company in Urbana, of which his father was the head.

He was a native of Dayton and was the father of four children, who with their mother, Loretta Hines Howard, daughter of the late Edward Hines, lumber magnate of Chicago, were in New York at the time of the tragic accident, having gone there some time ago.

The children are Howell, Jr.; Loretta and Lynn, and a daughter, born two weeks ago. A sister, Eunice Howard, gifted musician, also survives.

Mr. Howard had been playing polo extensively and was an expert horseman. He was the owner of a fine string of polo ponies and ranked as one of the best players in the Middle West. Mr. Howard was known as a "five-goal" man. His last appearance on the polo field in this city was last May when he participated in a number of games at the Miami Valley Hunt and Polo Club.

The funeral services were held at eleven A. M. in St. Brigids Church, Jericho, Long Island. Temporary burial was at Jericho and the body will be sent at some subsequent date to Dayton or Cincinnati for final rites and interment.

To Build 180 Ton Mill at Fernandina

NORFOLK, Va., July 12, 1937—The rapid growth of the industrial South is forcibly being shown by the increasing number of new plants springing up along the lines of the Seaboard Air Line Railway, Warren T. White, General Industrial Agent, said today in announcing the decision of the Fernandina Pulp and Paper Company to locate a new $6,000,000 180-ton mill at Fernandina, Fla.

Immediate construction is to start on this mill which will manufacture wood pulp from Southern pine. It is the 132nd plant to be secured by the Seaboard during the past year. Operations are expected to commence by August 1, 1938.

Mr. White stated that the new plant marks one of the most important developments which has yet taken place in the South's rapidly growing pulp and paper industry. For the past three years the Seaboard's Industrial Department has been negotiating with the interests associated with the above company in an effort to secure the location of the new mill in the vast area serviced by the Seaboard.

The site of this new mill comprises 175 acres fronting 2,000 feet on the Amelia River, Fernandina's harbor. Employment will be given to several hundred men in the building of the plant and when completed, approximately 400 men will be hired in addition to those engaged in woodcutting operations, hauling, etc. The development is expected to add considerably to the commercial life of northeast Florida and southeast Georgia.

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3. *Send the sheet to the calenders leveled to uniform thickness and with irregularities broken down*
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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Pulp and Paper Mills

General Construction News

Orange, Tex.—The Orange Pulp and Paper Company has plans under way for new pulp mill at local kraft paper mill, comprising several large units for raw material department, pulp drier and digester divisions, machine department and other structures. It will be equipped for initial daily output of about 75 tons. Pine timber from East Texas will be used for raw material and extensive developments will be carried out in timber areas for this purpose. E. I. Hardy is general manager.

Elkhart, Ind.—The American Coating Mills, Inc., Division street, manufacturer of coated folding boxboard specialties, has approved plans for new one-story and basement addition to mill. General contract for erection has been let to the Sollitt Construction Company, 109 North Dearborn street, Chicago, Ill., and work on superstructure is scheduled to be placed under way at once. New unit is estimated to cost close to $100,000, including equipment.

Modena, Pa.—The Modena Paper Company, organized recently to operate at a former local mill at Modena, has had plans revised for proposed expansion and improvements, previously referred to in these columns, and new bids have been asked on general contract from low bidders on former plans. Work will include building modernization and installation of equipment. No estimate of cost has been announced. Frederick L. Smith, 21 East Fortieth street, New York, N. Y., is architect and engineer.

Wilmington, N. C.—Riegel Paper Corporation, 342 Madison avenue, New York, N. Y., waxed glassine and other processed paper stocks, with mill at Milford, N. J., has concluded negotiations for purchase of large tract of land near Wilmington, to be used as a site for new pulp mill, for which plans will be prepared at early date. It will comprise a large group of one and multi-story units, with power house, pumping plant and other mechanical divisions. New mill will be equipped for an initial capacity of about 125 tons of processed pulp per day and is estimated to cost in excess of $1,500,000, including equipment. It is understood that work is scheduled to be placed under way in the fall. John L. Riegel is president and general manager.

Grand Rapids, Mich.—The Fibre Wardrobe Company, recently organized with capital of $25,000, is planning operation of local plant for the manufacture of a line of fibre products. New company is headed by M. A. De Windt, 425 Scribner avenue, Grand Rapids.

Salem, Ore.—The Oregon Pulp and Paper Company, manufacturer of unbleached sulphite pulp, bond, writing and other paper stocks, is said to have preliminary plans under consideration for expansion and improvements in mill, including erection of new units and installation of equipment for increased capacity. No estimate of cost has been announced.

San Francisco, Cal.—The Field-Ernst Envelope Company, 45 Fremont street, manufacturer of commercial envelopes and kindred paper products, has completed plans for new paper-converting plant on local site at Fifth and Tehama streets, to be two-story, estimated to cost close to $120,000, including equipment. General erection contract has been let to Cahill Brothers, Inc., 206 Sansome street, San Francisco. Day & Michelsen, 405 Montgomery street, are architects, and W. P. Day, last noted address, engineer.

Chester, Pa.—The Scott Paper Company, manufacturer of tissue papers, has awarded contract to the J. E. Brenneman Company, North American Building, Philadelphia, Pa., for excavations and piling for new addition to mill, previously referred to in these columns, to be known as Building No. 13. Work will be placed under way at once. General erection contract will be awarded at early date. New unit will be of one-story type, 60 feet high, and is estimated to cost in excess of $1,000,000, with machinery. The Stone & Webster Engineering Corporation, 49 Federal street, Boston, Mass., is consulting engineer.

Camden, N. J.—The MacAndrews & Forbes Company, Third and Jefferson streets, manufacturer of wallboard products, etc., has awarded general contract to Barclay White & Company, 22 North 36th street, Philadelphia, Pa., for new addition to power house. Work will be placed under way at once. Cost close to $50,000, including equipment.

Shreveport, La.—Bird & Son, Inc., East Walpole, Mass., manufacturer of roofing and building papers, wall board, etc., has work nearing completion on new branch plant at Shreveport, where company acquired the former textile mill of the Gilmer Company in Angurs district a few months ago, as reported in these columns at that time. A Universal roofing machine is being installed, purchased from the Roofing Machinery Manufacturing Company, Chicago, Ill., and complete auxiliary equipment. New mill will be given over largely to the production of saturated papers for roofing and building service, as well as smooth-surfaced roll roofing and kindred specialties. It will represent a total investment in excess of $150,000. Plant is scheduled to be placed in operation at early date.

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Glens Falls, N. Y.—The Imperial Paper and Color Corporation, Warren street, manufacturer of wall papers, etc., has begun construction of two new additions to mill, comprising a main one-story unit, 150 x 185 feet, and smaller adjoining structure, 40 x 40 feet, estimated to cost in excess of $175,000, including equipment. A number of miscellaneous contracts have been let for the buildings. This expansion supplements a one-story and basement addition, 60 x 120 feet, for which general contract was awarded to the Kingsbury Construction Company, Main street, Hudson Falls, N. Y., as previously noted in these columns.

Savannah, Ga.—The Realty Division of the Union Bag and Paper Corporation, Woolworth Building, New York, N. Y., has plans maturing for development of a new community on 135-acre tract of land in vicinity of new mill in the Hermitage Plantation district, Savannah, to be used by employees at the plant. Work will comprise a small hotel building, hospital and other structures, as well as a group of about 100 dwellings for mill operatives; of the latter, about 25 homes have now been completed. It is expected to have the entire development in operation by close of the year.

Chandler, Que.—The Gaspesia Sulphite Company, Ltd., Quebec, Que., recently organized, has acquired the former pulp mill of the Premier Pulp and Paper Corporation at Chandler, idle for some time past, and will remodel and modernize at early date, including buildings and machinery. New equipment will be installed in different departments. It is proposed to have the plant ready for operation soon, with sulphite pulp production similar to previous output at mill. Work is estimated to cost close to $100,000, including equipment.

Montreal, Que.—The Consolidated Paper Corporation, Sun Life Building, Montreal, is continuing its expansion and improvement program at different mills, inaugurated a number of months ago, and additional machines have been placed in operation at several mills, developing considerable increase in former capacity. It is expected that the program will be practically completed by the close of this year, with further advance in output. A large appropriation has been made for the work.

Nipigon, Ont.—The Lake Sulphite Pulp Company, Ltd., Port Arthur, Ont., organized a few months ago, is awarding contracts for equipment for new pulp mill in the vicinity of Nipigon, Thunder Bay district, previously referred to in these columns. An order for pulp machinery has been given to the Dominion Engineering Company, Ltd., Lachine, Que., totaling close to $500,000; an award for digesters has been let to the Dominion Bridge Company, Ltd., Montreal, Que., at a reported figure of about $160,000; accumulators and accessories will be furnished by the Horton Steel Works, Ltd., Fort Erie, Que. Other contracts for miscellaneous equipment and machinery will be placed soon. An award has been made to the Thunder Bay Harbor Improvement Company, Ltd., Port Arthur, for an 800-foot dock on water front for material shipments. Entire project is reported to represent a gross investment of close to $5,000,000 and plant will be ready for operation in 1938. J. Stadler, 1117 St. Catherine street, West, Montreal, is consulting engineer.

Tokyo, Japan—The Nisse Rayon Pulp Company, Ltd., a subsidiary of the Japan Soda Company, Ltd., Tokyo, is said to have completed negotiations for a concession grant covering about 70,000,000 cubic feet of timber on Queen Charlotte Island, Canada, and will begin early development for pulp wood supply for rayon pulp production. First noted company is reported planning a new mill on site soon to be selected for large capacity production.

New Bedford, Mass.—The C. M. Carroll Paper Company, Inc., 56 Seventh street, has been incorporated with capital of $10,000, to deal in paper products of various kinds. Charles M. Carroll is president and treasurer.

Springfield, Mass.—The B. B. W. Paper Company, 168 Bridge street, has filed notice of organization to deal in paper goods of various kinds. Company is headed by Paul C. Best and Bernard R. Burns, Springfield; and James G. Whiting, Holyoke, Mass.

Beckett Paper Co. To Build

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, July 12, 1937.—The Beckett Paper Company, one of the largest industries in Hamilton, is planning the construction of three, and possibly four, additional buildings to its present group at Fourth and Buckeye streets, it was disclosed the past week when a letter from Guy H. Beckett, vice-president of the company, was read at a meeting of City Council in Hamilton.

The letter requested that Council co-operate with the Beckett Paper Company by ordering Buckeye street vacated between Fourth and Fifth streets, so that company-owned property will not be cut in two by the street.

The proposed new structure would comprise an office building, a box manufacturing plant, a warehouse for paper and probably an additional warehouse for pulp storage, according to Mr. Beckett's letter.

The letter stated that the cost of the improvements would be between $40,000 and $60,000, and that construction would be started immediately.

Council members, after receiving the request and discussing the matter, instructed Millikin Shotts, Director of Law, to draw up a resolution announcing the intention of the City of Hamilton to vacate the property named in the Beckett letter.

It was stated that the Board of Revision of Assessments will hold a hearing on the proposal on July 16, and that a public hearing will be conducted in the Council Chamber probably at the next meeting of Council on July 21.

There seems no doubt that the request of the company will be granted and that no time will be lost in carrying out the improvements, which promise to be of much importance to the industry in the Miami Valley, and to Hamilton as a community and paper-mill center.

Starts Plant at Victory Mills

[FROM OUR REGULAR CORRESPONDENT]

THOMSON, N. Y., July 12, 1937—Removal of the equipment of United Paperboard Company to new plant at Victory Mills was completed last week and it is understood that the factory here is to be abandoned. The mill in this village has been occupied for several years. Operations at the new mill at Victory Mills, formerly occupied by the American Manufacturing Company, were started early this week and about 150 persons will be employed.

Above—Dead front control board assembly with 440-volt board at left, 2200-volt control at right.

Below—200-kw. generator, 300-hp. synchronous motor and exciters in compact assembly at right, and D-C. mill drive motor in left foreground.

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It is a source of pride that so many mills, equipped in earlier years, turn again to Westinghouse when modernization is needed. Whether you are contemplating a new mill, or modernization, it is in your interest to investigate the complete Westinghouse service. For full details without obligation, call your nearest Westinghouse office. J 93262

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PAPER TRADE JOURNAL

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY—Fall Convention, DeSoto Hotel, Savannah, Ga., Oct. 18-20, 1937.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

THE FUTILITY OF FEDERAL WAGE AND HOUR REGULATION

"The minimum wage specified in the proposed Federal wage and hour law will tend to become the maximum and skilled labor will have to submit to a scaling down of wage differentials if the purpose of the Act is to be realized," according to Allen W. Rucker and N. W. Pickering, business economists, in a recent analysis of the Black-Connery Industrial Control Bill recently published by the Farrel-Birmingham Company, Ansonia, Conn.

The analysis asserts that the Act, in effect, declares that unemployment can be corrected by limiting the work week, and labor's income increased by raising the minimum hourly wage rate. Thus, its sponsors assume that the aggregate total of industrial payrolls can be enlarged by the over-simplified device of paying out such sums at a higher rate per hour. The fact is, however, that the annual total of manufacturing payrolls is strictly limited by natural forces beyond the control of man. At no time since 1920 has the annual total of manufacturing payrolls been able to rise above the total farm income. Nor has it fallen seriously below that income. The rapid rise of wage rates during the inflationary boom of the '20s, the wage-maintenance program of the Hoover Administration and the subsequent Recovery legislation of the present incumbents alike failed to have the slightest direct influence upon the annual total of manufacturing payrolls. Throughout that period the total was limited, if not actually determined, by total farm income.

The authors assert that within a fixed sum available for annual industrial payrolls, there can only be one result from the proposed attempt to regulate rates and hours—a continuous, and eventually permanent, large-scale unemployment. Here, as in England and other foreign countries, uneconomic trades-union agreements, as well as much previous State and Federal legislation, have had this effect even during past periods of prosperity. It is an effect which follows as logically and as certainly as water flows down hill in response to the law of gravity.

Knowing at any time the aggregate annual sum available for industrial payrolls (roughly the equivalent of the total farm income in any year), it is merely a question of simple arithmetic to ascertain the total man-hours of labor which the sum will buy. Within the limits of that fixed sum for any year, and a given average for hourly wage rates, there can be only a specified number of man-hours of employment. Thus with a farm income of $7.23 billions in 1935 and manufacturing payrolls totalling $7.22 billions, the average hourly wage rate prevailing in industry (60c) served to buy 12.03 billion man-hours of labor. This figure conforms very closely with that computed from the figures of 25 industries compiled by the National Industrial Conference Board. Put another way, the total payroll is merely the product of the average hourly wage rate and the total number of man-hours. Where the total is fixed by other forces, the two component parts must vary within that total—one can be increased only by a reduction of the other. In plain terms, an increase in the average hourly wage rate compels a reduction in the number of man-hours of employment which a given payroll disbursement will buy.

The conditions are exactly those existing where a fixed area of factory floor space, say 10,000 feet, may be chosen of any length and width so long as the product of the two does not exceed the fixed area. Thus, within the illustrative 10,000 square feet, the width may vary from 25 to 100 feet, but with each increase in the width the length must correspondingly be reduced successively from 400 feet for 25 feet of width to 200 feet for 50 feet of width, and to 100 feet of length for 100 feet of width. In all cases of a fixed area, expansion of one dimension automatically serves to reduce the other.

This, in brief, is precisely the situation which must develop under any wage and hour law. With the sum total of payrolls limited, if the "planners" increase average hourly wage rates they will automatically reduce the total number of man-hours of employment.

Inasmuch as the admitted purpose of the Bill is to

increase the incomes of the alleged underpaid one-third of labor, it is clear that the first step under such legislation will be the raising of the minimum wage rate. Unless trade unions are willing to submit to a proportionate reduction in rates above the minimum, the national average of hourly wage rates in industry will be raised. And that means a reduction in total man-hours of work and a diminution in the total number of persons employed.

Regulation of working hours and regulation of wage rates are mutually antagonistic efforts. The first attempts to distribute more widely the available man-hours of work, the process calling for higher wage rates to maintain incomes. This logical sequence requires wage rate regulation, and the effect of such regulation is to diminish the total available man-hours of employment. The reason, as heretofore pointed out, is simply that the total wage disbursements of manufacturers cannot be expanded by *fiat* but are, instead, limited, if not determined, by economic forces beyond human control. Within any annual payroll aggregate set by those forces, more employment hours require a reduction in wage rates, whereas an increase in wage rates automatically reduces available work in terms of hours.

It will be seen that for the proposed Federal wage and hour legislation effectively to provide the employment it purports to provide, then:

1. The *average* hourly wage rate in manufacturing must, at current levels of farm income and total payrolls, be forced down to approximately the forty-cent minimum; or,

2. Farm prices must be inflated (in order to inflate the annual sums available for payrolls) to a level in excess of any seen since the war-time peak of 1918-19.

All this is simply a matter of arithmetic. The question arises: Have those most directly concerned with this matter—management and labor—given it the consideration it deserves?

Any truly liberal view requires that employment be considered, not in terms of jobs, but in terms of man-hours of work available. If that total be made large enough, the jobs needed will abound. And the only way under economic law to effect that result is to permit the operation of natural forces to bring all price and wage relationships into balance.

The authors believe that it is perhaps too much to expect that this can be done within the immediate future but on the other hand, it is not too much to ask that legislation forcing further rigidities and obstructions be indefinitely postponed.

To Handle Parker Blotting Papers

Paper Merchants, Inc., of 140 North Sixth Street, Philadelphia, Pa., are sending announcements out to the trade that they are now distributors of Parker Blotting Papers in Philadelphia.

Production Ratio Report

The statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3% (c)	76.1%	65.8%	.....
February	90.1% (c)	77.9%	70.0%	.....
March	90.3% (c)	76.0%	70.5%	.....
April	92.1% (c)	82.3%	70.0%	.....
May	90.6% (c)	81.6%	69.4%	.....
June	86.9% (c)	80.7%	72.3%	.....
July	.....	77.3%	64.9%	.....
August	.....	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
YEAR AVERAGE	.....	81.3%	70.5%	.....
YEAR TO DATE				
First 26 weeks	90.0% (c)	79.1%	69.5%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*June 5	85.4%	June 6	81.7%
*June 12	87.7%	June 13	81.1%
*June 19	88.8%	June 20	80.5%
*June 26	88.1%	June 27	79.4%
*July 3	83.0%	July 6	68.8%

The following statistics show the number of mills reporting by ratio groups:

NUMBER OF MILLS REPORTING, CURRENT WEEKS

Ratio Limits	June 5 1937	June 12 1937	June 19 1937	June 26 1937	July 3 1937
0% to 50%	56	52	49	42	31
51% to 100%	262	263	266	264	129
Total mills reporting	318	315	315	306	160

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported on January 4, 1937, Machine Improvement Survey.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

Mos.	1937	1936	1935	1934	Mos.	1937	1936	1935	1934
Jan.	80% (e)	61%	61%	....	July	....	69%	59%	....
Feb.	86% (e)	67%	67%	....	Aug.	....	75%	65%	....
Mar.	87% (e)	68%	67%	....	Sept.	....	76%	69%	62%
Apr.	89% (e)	70%	61%	....	Oct.	....	82%	76%	63%
May	86% (e)	68%	61%	....	Nov.	....	79%	70%	56%
June	....	68%	65%	....	Dec.	....	74%	60%	52%

Week ending June 5, 1937, 76%
Week ending June 12, 1937, 82%
Week ending June 19, 1937, 71%
Week ending June 26, 1937, 79%
Week ending July 3, 1937, 76%

(e) Basic figures revised to include new members of the National Paperboard Association.

To Exhibit Paper at Chicago

The exhibit of wrapping paper, paper products and twine which will be held in connection with the Semi-Annual Convention of The National Paper Trade Association in Chicago, September 20 to 23 is attracting considerable interest.

Judging from the wide range of products which will be exhibited and the number and character of the firms that have already made reservations, the success of this exhibit is assured. Among the well-known manufacturers of wrapping paper, toilet paper, towels, napkins, cups, containers and twine who have already made reservations are the following firms:

Orchard Paper Company, St. Louis; C. E. Twombly Company, Medford, Mass.; Central Paper Company, Muskegon, Mich.; Crystal Tissue Company, Middletown, Ohio; Detroit Sulphite Pulp and Paper Company, Detroit, Mich.; Central Paper Company, Menasha, Wis.; A. P. W. Paper Company, Albany, N. Y.; Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.; Lily-Tulip Cup Company, New York City; Hoberg Paper and Fibre Company, Green Bay, Wis.; The Hooven and Allison Company, Xenia, Ohio.

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Section of the
Technical Association of the Pulp and Paper Industry
T.A.P.P.I.

Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

Second Quarter, 1937

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons containing 20 coupons may be purchased for $2.00 and books containing 100 coupons may be purchased for $10.00.

April 6, 1937

2,075,823. Production of sulphur dioxide. Edwin J. Mullem and Charles A. Gallagher, assignors to General Chemical Company, New York, N. Y. Filed April 26, 1933. 6 claims. (Cl. 266-28). A sulphur burner.

2,075,835. Coated paper or sheet. Allen L. Spafford, assigner of one-half to Wood Conversion Company, Cloquet, Minn., and one-half to the Paper Service Company, Cincinnati, Ohio. Filed Aug. 17, 1931. 8 claims. (Cl. 154-28). Method of waterproofing a sheet, creping it, and then uniting it to a fibrous elastic core.

2,075,836. Manufacture of coated sheet. Allen L. Spafford, assigner to The Paper Service Company, Cincinnati, Ohio. Filed April 5, 1933. 12 claims. (Cl. 154-33). Method of making creped sheets.

2,076,014. Roofing. Fred H. Bluhm, Detroit, Mich. Filed June 13, 1935. 1 claim. (Cl. 108-7).

2,076,095. Device for observing the operation of press rolls. Oscar Rolls, Honefoss, Norway. Filed Sept. 9, 1933. 3 claims. (Cl. 92-49). Means for measuring the quantity of water collected by each section in each unit of time.

2,076,159. Art of making leatherboard. Herman W. Richter, assignor to George O. Jenkins Company, Bridgewater, Mass. Filed March 29, 1935. 9 claims. (Cl. 8-2). Method of bleaching with an aqueous solution of an alkali binoxalate.

2,076,312. Automatic cone making machine. William S. Whiting, Jr., assignor to The Champion Paper and Fibre Company, Canton, N. C. Filed July 31, 1934. 21 claims. (Cl. 93-79).

2,076,343. Reenforced paper and method of forming same. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Co., Chicago, Ill. Filed Nov. 29, 1935. 2 claims. (Cl. 154-2). Adhesive is applied between two sheets; threads are wetted with glycerin and formed between the sheets.

2,076,349. Gypsum board. John M. Porter and George H. Way, assignors to American Cyanamid and Chemical Corporation, New York, N. Y. Filed May 12, 1930. 1 claim. (Cl. 106-34).

2,076,367. Method of and apparatus for drying carbon tissues. Gustave A. Friess, assignor to News Syndicate Co., Inc., New York, N. Y. Filed April 29, 1935. 4 claims. (Cl. 34-24).

2,074,415. Apparatus for the drying of paper or fabrics. Frank W. Partsch, assignor to J. O. Ross Engineering Corporation, New York, N. Y. Filed April 19, 1935. 5 claims. (Cl. 34-48).

2,076,441. Moisture tester and method. Albert L. Berry, Salina, Kansas. Filed Sept. 2, 1930. 12 claims. (Cl. 175-183). An electrical method.

2,076,456. Laminated material and process of making same. Alphonse Gams and Theodor Sutter, assignors to Society of Chemical Industry of Basel, Switzerland. Filed April 27, 1932. 2 claims. (Cl. 154-2). Use of permanently fusible, non-hardening amine resin.

2,076,507. Coating composition. Victor H. Turkington, assignor to Bakelite Corporation, New York, N. Y. Filed Feb. 28, 1929. 14 claims. (Cl. 134-26). The resinous product obtained from the reaction of a phenol with a fatty oil in the presence of hexamethylenetetramine.

April 13, 1937

2,076,599. Paper for toweling and other purposes. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Aug. 30, 1935. 8 claims. (Cl. 91-68).

2,076,636. Material in the nature of leather substitute and process of manufacture. Albert J. Hanley, assignor to Respro Inc., Cranston, R. I. Filed July 29, 1933. 2 claims. (Cl. 154-2).

2,076,817. Cellulose product. Adam Hoche, assignor to Cellulose Research, Inc., Chicago, Ill. Filed Feb. 8, 1935. 4 claims. (Cl. 260-10). Use of dilute nitric acid with wood, sisal, hemp, bagasse, etc.

2,076,870. Core-end for paper winding cores. James A. Taylor, Portland, Maine. Filed May 17, 1935. 1 claim. (Cl. 242-68).

2,076,899. Disintegrating paper making material. Marcel Lamort, assignor to E. et M. Lamory Fils, Vityr-le-Francoic, France. Filed March 9, 1934. 4 claims. (Cl. 92-20).

2,076,945. Paper product and method of making the same. Victor T. Hoeflich, assignor to American Merrilei Corporation, New York, N. Y. Filed Dec. 4, 1935. 28 claims. (Cl. 41-10). A paper wreath.

2,076,989. Building construction unit. Fred M. Harpham, assignor to The Akers and Harpham Company, Akron, Ohio. Filed March 20, 1928. 9 claims. (Cl. 108-13).

2,076,991. Method of attaining improved felting of the fibers in paper pulp on the wet part of paper and board making machines. Sigbjorn Paul Herbert Ebbinghaus Holgersson, Storvik, and William Anders Eugen Tibell, Molndal, Sweden. Filed April 4, 1935. 2 claims. (Cl. 92-45).

2,076,993. Decorative sheet and process of preparing the same. James J. Jackson, assignor to Paulsboro Manufacturing Company, Paulsboro, N. J. Filed Feb. 10, 1934. 12 claims. (Cl. 91-68).

2,077,004. Surface covering and method of making same. Philip H. Pennell and Charles H. Draper, assignor to Armstrong Cork Company, Lancaster, Pa. Filed Oct. 3, 1931. 3 claims. (Cl. 91-67.9).

2,077,015. Paper making process. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Oct. 27, 1932. 7 claims. (Cl. 92-21). Artificial leather.

2,077,016. Paper. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Oct. 27, 1932. 8 claims. (Cl. 92-21). A laminated paper-like web.

2,077,017. Paper. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Oct. 27, 1932. 8 claims. (Cl. 92-21). Laminated paper-like web.

2,077,059. Reclaiming fiber from waste paper. Francis H. Snyder and Stanley F. M. Maclaren, assignors to Snyder Maclaren Processes, Inc., New York, N. Y. Filed May 23, 1934. 8 claims. (Cl. 92-20). Deinking method.

2,077,103. Bleaching process. Ehrhart Franz, Leipzig, Germany. Filed Dec. 28, 1933. 5 claims. (Cl. 8-2). The use of hydrogen peroxide in the presence of stabilizers and accelerators free of heavy metals.

2,077,112. Imitation leather paper. Harvey G. Kittredge and Albert J. Turner, assignors to The Kay and Ess Chemical Corporation, Dayton, Ohio. Filed Dec. 28, 1934. 1 claim. (Cl. 91-70).

2,077,155. Sound absorbing structure. Theodore M. Prudden, Hingham Center, Mass. Filed Nov. 15, 1935. 8 claims. (Cl. 154-44).

April 20, 1937

2,077,393. Paper manufacture. Arthur Minard Brooks, assignor to Raffold Process Corporation, Andover, Mass. Filed Sept. 26, 1934. 19 claims. (Cl. 92-21). Use of a water-insoluble oxalate filler.

2,077,396. Moistureproof material. William Hale Charch and Albert Hershberger, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Feb. 24, 1934. 11 claims. (Cl. 91-68). A transparent wrapping tissue.

2,077,399. Moistureproof films. Arnold M. Collins and Louis L. Larson, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed July 23, 1934. 7 claims. (Cl. 91-68). Transparent, flexible, moistureproof cellulose film.

2,077,400. Moistureproof materials and method of making same. John H. Collins, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Jan. 12, 1932. 36 claims. (Cl. 91-68).

2,077,436. Paper Manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed April 14, 1932. 34 claims. (Cl. 92-40). Use of alkaline filler.

2,077,438. Coated creped fabrics and articles and process of making them. William Wallace Rowe, assignor to The Paper Service Company, Lockland, Ohio. Filed July 19, 1934. 11 claims. (Cl. 154-33).

2,077,475. Method and means for making paper. Carl S. Hammersley, New York, N. Y. Filed Oct. 22, 1934. 3 claims. (Cl. 92-76). Means for wetting paper as it enters the calender roll.

2,077,513. Ribbed board. George A. Muttress, Los Angeles, Calif. Filed Oct. 28, 1935. 5 claims. (Cl. 72-116).

2,077,535. Means for applying adhesives to materials for coating surfaces or in the manufacture of coated or compound materials. Gabriel Smith, Leyton, England. Filed June 13, 1935. 7 claims. (Cl. 154-35).

2,077,614. Paper making machine. William Boyd Campbell, assignor to Harry John Rowley, Quebec City, Quebec, Canada. Filed Nov. 21, 1935. 1 claim. (Cl. 92-43). A paper webforming apparatus.

2,077,669. Friction material and method of making the same. Donald S. Bruce, assignor to Johns-Manville Corporation, New York, N. Y. Filed June 1, 1934. 9 claims. (Cl. 91-70).

2,077,720. Felted product and method of making the same. William R. Seigle and George Basil Brown, assignors to Johns-Manville Corporation, New York, N. Y. Filed May 28, 1935. 13 claims. (Cl. 92-21).

2,077,726. Apparatus for the manufacture of coated paper. Diong D. Uong, assignor to Fitchburg Paper Company, Fitchburg, Mass. Filed Aug. 17, 1935. 4 claims. (Cl. 91-43).

2,077,816. Doctor for paper making and like machines. D. Frederick William Vickery, London, England. Filed Jan. 18, 1936. 8 claims. (Cl. 92-74).

2,077,884. Lignin sulphonic acid molding compositions and method of treating same. Guy C. Howard and Lloyd T. Sanborn, assignors to Marathon Paper Mills Company and Guy C. Howard Company, Rothschild, Wis. Filed July 19, 1934. 26 claims. (Cl. 18-47.5).

2,077,891. Means for joining the ends of drier felts and the like. Tom Milnes, assignor of one half to Ayers Limited, Lachute Mills, Quebec, Canada. Filed Dec. 16, 1935. 2 claims. (Cl. 24-33).

2,077,913. Box-forming machine. Marshall A. Waters, Green Bay, Wis. Filed June 22, 1935. 4 claims. (Cl. 93-44.1).

2,077,952. Envelope making machine. Abraham Novick, assignor to F. H. Smithe Machine Co.,

Inc., New York, N. Y. Filed Oct. 2, 1931. 9 claims. (Cl. 93-62).

2,077,998. Multiply latex-treated paper. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Co., Chicago, Ill. Filed Jan. 14, 1933. 3 claims. (Cl. 154-43). A gummed paper tape comprising an inner ply of paper impregnated with rubber.

2,078,014. Screen manufacture. Floyd F. Oplinger and Christian John Wernlund, assignors to E. I. du Pont de Nemours and Company, Inc., Wilmington, Del. Filed Jan. 17, 1934. 8 claims. (Cl. 204-8).

2,078,030. Method and apparatus for beating paper pulp. Walter N. Sherwood, North Hoosick, N. Y. Filed Sept. 10, 1934. 9 claims. (Cl. 92-25). A beater.

2,078,036. Box making. George H. Snyder, Glenside, and Allen G. Snyder, Chestnut Hill, Pa. Filed Feb. 19, 1936. 5 claims. (Cl. 93-55).

2,078,037. Box-lid machine. George H. Snyder, Glenside, and Allen G. Snyder, Chestnut Hill, Pa. Filed Feb. 19, 1936. 15 claims. (Cl. 93-36.6).

2,078,131. Shoe construction. George Ferguson, Wollaston, Mass.; H. F. Tracy and G. R. Redding, administrators. Filed March 27, 1933. 6 claims. (Cl. 154-2). Method of impregnating wood pulp with resin-like products and molding two such sheets.

2,078,172. Coated film. Allen Abrams, George W. Forcey and George J. Brabender, assignors to Marathon Paper Mills Company, Rothschild, Wis. Filed March 19, 1936. 9 claims. (Cl. 91-68). A base of wax and rubber, having an adherent flexible non-tacky coating.

2,078,188. Apparatus for manufacturing, at choice, bags, pockets, double pockets, and envelopes. Alfred Winkler and Max Duennebier, Neuwied, Germany. Filed April 16, 1935. 33 claims. (Cl. 93-62).

April 27, 1937

2,078,218. Intercepting member for paper stock treating machine. Archer Le Roy Bolton, assignor to John W. Bolton and Sons, Inc., Lawrence, Mass. Filed Nov. 26, 1934. 9 claims. (Cl. 92-22). Stock treating metal blades on a paper stock treating roll.

2,078,222. System of fiber liberation. Charles D. Altick, Lloyd D. Smiley and Edward T. Turner, assignors to Pulp Process and Development, Inc., Dayton, Ohio. Filed March 12, 1934. 36 claims. (Cl. 92-7). Combination of a soak tank and a digester, with a circulation means between the two.

2,078,226. Wire fabric making machine. Arthur Ernest Blashill, Withington, Manchester, England. Filed Jan. 14, 1935. 8 claims. (Cl. 140-11).

2,078,269. Artificial lumber. James V. Nevin, Aberdeen, Wash. Filed April 3, 1934. 3 claims. (Cl. 92-21). Consists of 70 to 90 per cent fibrous wood, bonded by 5 to 30 per cent of an infusible binder formed of the reaction between urea, cresylic acid and formaldehyde.

2,078,272. Apparatus for manufacturing saturated sheeted fibrous structures. Izador J. Novak, assignor to Raybestos-Manhattan, Inc., Passaic, N. J. Filed May 21, 1934. 9 claims. (Cl. 92-40). Combination of a screen and screen roll for saturating web of fibers.

2,078,296. Means for testing compression strength of materials. Samuel Vadner, Crestwood, N. Y. Filed Oct. 19, 1934. 4 claims. (Cl. 265-14). Means for testing the compression strength of corrugated paper board.

2,078,469. Method and apparatus for joining wire cloth. William E. Buchanan, assignor to Appleton Wire Works, Appleton, Wis. Filed May 14, 1934. 21 claims. (Cl. 140-3). Method of producing a joint in wire cloth by application of heat.

2,078,422. Laminated insulation material. Omar H. Smith, assignor to United States Rubber Company, New York, N. Y. Filed June 29, 1934. 3 claims. (Cl. 154-2.6). Fibrous material impregnated with meta-styrol.

2,078,451. Pulpstone. Thure Larsson, assignor to Norton Company, Worcester, Mass. Filed Dec. 6, 1935. 2 claims. (Cl. 51-207). Method of attaching segmental abrasive blocks to the central portion of a pulpstone.

2,078,452. Pulpstone and filler for the same. Thure Larsson, assignor to Norton Company, Worcester, Mass. Filed Dec. 12, 1935. 1 claim. (Cl. 51-206). Filler for the crevices between abrasive segments attached to a central pulpstone.

2,078,496. Machine for making paper bags. Roy W. Jaite, Lakewood, Ohio. Filed Dec. 16, 1931. 1 claim. (Cl. 164-68). A cutting device for a tube-making machine.

2,078,705. Roll grinding machine. Albert G. Belden, assignor to Norton Company, Worcester, Mass. Filed Dec. 24, 1935. 10 claims. (Cl. 51-100).

2,078,715. Oscillating mechanism for the oscillating wires or sieves of paper making and other machinery. Klemens Lurz and Karl Schoenemann, Heidenheim-on-the-Brenz, Germany. Filed Nov. 9, 1934. 3 claims. (Cl. 74-61).

2,078,800. Paper break detector. Pieter Juchter, assignor to General Electric Company, Schenectady, N. Y. Filed Dec. 3, 1936. 3 claims. (Cl. 192-127). A photoelectric device arranged to receive light controlled by a moving strip of paper.

2,078,810. Apparatus for continuous treatment of wood pulp and the like with chemicals. Johan Cristoffer Frederik Carl Richter and Karl Wilhelm Rosen, assignors to Aktiebolaget Kamyr, Oslo, Norway. Filed Feb. 20, 1935. 5 claims. (Cl. 8-2). A tank, with circulating apparatus, for treating cellulosic material with chlorine gas and the like.

May 4, 1937

2,078,955. Apparatus for drying vegetable fiber. Gaston J. Lipscomb, Montclair, N. J. Filed Aug. 2, 1934. 4 claims. (Cl. 34-23). Apparatus for drying loose shredded bagasse.

2,078,959. Paper package. Francis S. McDonnell, Milton, Mass. Filed March 4, 1935. 1 claim. (Cl. 206-60). A method of shipping paper on skids.

2,079,120. Process for production of caustic alkali solutions adapted to formation of alkali cellulose and having a uniform catalytic activity. Albert H. Hooker, Burr H. Ritter and Stanley F. M. MacLaren, assignors to Hooker Electrochemical Company, New York, N. Y. Filed Aug. 7, 1935. 4 claims. (Cl. 23-230).

2,079,229. Pigment paste for carbon papers, typewriter ribbons and stencil sheets. Walther Schrauth, assignor to "Unichem" Chemikalien Handels A.-G., Zurich, Switzerland. Filed June 29, 1933. 12 claims. (Cl. 134-1).

2,079,273. Creping. Edward H. Angier, assignor to Edward H. Angier, as trustee, for Angier Laboratories, Framingham, Mass. Filed May 16, 1930. 19 claims. (Cl. 154-33). The web is caused to adhere to a web of prepared paper, the assembled webs are creped and the two webs separated.

2,079,292. Closure for collapsible paper stock barrels and method of forming the same. George S. Jones, assignor to Oswego Falls Corporation, Fulton, N. Y. Filed Aug. 15, 1934. 7 claims. (Cl. 113-121).

2,079,313. Method for making alkali-cellulose and products therefrom. Paul D. Clary and Franklin T. Georgeson, Eureka, Calif. Filed Oct. 31, 1933. 3 claims. (Cl. 260-10).

2,079,379. Coated material and method of making same. James A. Mitchell, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed May 3, 1934. 8 claims. (Cl. 91-68). Wrapping tissue coated with pyroxylin, a wax material, a blending material and a plasticizer comprising dicyclohexyl phthalate.

2,079,390. Work holding and safety device for paper cutting machines. Daniel M. Winans, Binghamton, N. Y. Filed Nov. 1, 1934. 8 claims. (Cl. 164-59).

2,079,395. Cellulosic product and process of making same. Hamilton Bradshaw, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed May 3, 1934. 4 claims. (Cl. 91-68). A transparent, non-fibrous wrapping tissue, containing a cellulose derivative, a wax material and a plasticizer, such as dicyclohexyl phthalate and cyclohexyl acid phthalate.

May 11, 1937

2,079,667. Pulp molding. George W. Swift, Jr., assignor to George W. Swift, Jr., Inc., Bordentown, N. J. Filed March 13, 1937. 7 claims. (Cl. 92-54). Apparatus for forming wet pulp articles of irregular contour.

2,079,780. Washable paper. Robert A. Voet, assignor to United Wall Paper Factories, Inc., Jersey City, N. J. Filed July 27, 1934. 2 claims. (Cl. 91-67.9). Method of using solubilized casein.

2,079,787. Pulpstone. Hugh W. H. Beth, assignor to Norton Company, Worcester, Mass. Filed Aug. 12, 1936. 4 claims. (Cl. 51-207).

2,079,846. Machine for the manufacture of paper. Albert Edward Harold Fair, assignor to Economy Filler Processes, Inc., Niagara Falls, N. Y. Filed March 7, 1934. 2 claims. (Cl. 92-40). A series of nozzles adapted to spray a filler suspension on the lip of the flow box to flow therefrom onto the fiber suspension.

2,079,875. Paper container. Henry J. Reiter, assignor to Brown and Bailey Company, Philadelphia, Pa. Filed July 18, 1936. 8 claims. (Cl. 229-37). A disposable bottle formed from a single unitary blank.

2,079,876. Paper container. Henry J. Reiter, assignor to Brown and Bailey Company, Philadelphia, Pa. Filed Dec. 11, 1936. 6 claims. (Cl. 229-37). A bottle formed of foldable sheet material.

2,079,993. Process of treating paper. Thomas Hans, Chicago, Ill. Filed Jan. 11, 1934. 7 claims. (Cl. 91-68). Paper is coated with a viscose solution, containing a vegetable oil.

2,080,006. Method of making box corner stay strips. Patrick T. Jackson, assignor to American Reenforced Paper Company, Attleboro, Mass. Filed Dec. 13, 1935. 5 claims. (Cl. 154-2).

2,080,009. Plaster wallboard and method of making it. Carlisle K. Roos, assignor to United States Gypsum Company, Chicago, Ill. Filed Oct. 16, 1926. 18 claims. (Cl. 154-2).

2,080,031. Fiberboard. James N. Devereux, assignor to United States Gypsum Company, Chicago, Ill. Filed Aug. 4, 1933. 5 claims. (Cl. 92-3). The board comprises a body mass of relatively coarse fibers and a thin skin-like surface portion of finer fibers carrying a larger amount of precipitated size.

2,080,077. Molded product and process of making same. Guy C. Howard and Lloyd T. Sandborn, assignors to Masonite Corporation, Laurel, Miss. Filed Jan. 26, 1935. 24 claims. (Cl. 18-55). Method of molding a steam-treated and exploded fiber.

2,080,078. Molding composition and process of making same. William H. Mason, Robert M. Boehm, and Wilbur Euclid Koonce, assignors to Masonite Corporation, Laurel, Miss. Filed Jan. 26, 1935. 18 claims. (Cl. 92-1). The fiber structure is altered by treatment with steam under pressure to a state of plastic flowability for hot pressure molding.

2,080,285. Flexible wallboard. John Comrie MacIldowie, assignor to Johns-Manville Corporation, New York, N. Y. Filed Sept. 11, 1934. 4 claims. (Cl. 92-61). Asbestos fiber Portland cement product.

2,080,292. Apparatus for controlling a movable web. George R. Webber, assignor to Standard Brands Incorporated, New York, N. Y. Filed July 17, 1931. 20 claims. (Cl. 271-2.6). Method of cutting individual wrappers from a continuous web of wrapping material.

2,080,357. Adjustable cell-case or partition machine. Walter E. Jensen, assignor to F. J. Kress Box Company, Pittsburgh, Pa. Filed Sept. 18, 1935. 19 claims. (Cl. 93-37).

2,080,362. Manufacture of paper. Luther B. Rogers, assignor to Champion-International Company, Lawrence, Mass. Filed Jan. 25, 1935. 8 claims. (Cl. 91-70). The web is calendered while at its determined optimum moisture content.

May 18, 1937

2,080,437. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Oct. 15, 1934. 26 claims. (Cl. 92-40). Method of precipitating an alkaline filler in the paper web.

2,080,442. Envelope machine. Ferdinand L. Smithe, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Aug. 12, 1932. 7 claims. (Cl. 93-62).

2,080,505. Folding machine. Earl D. Rader and Edwin W. Goodwin, assignors to Dexter Folder Company, New York, N. Y. Filed Feb. 19, 1931. 95 claims. (Cl. 270-62).

2,080,533. Preparation of cellulosic material. Martin J. Connolly, New York, N. Y. Filed July 11, 1935. 10 claims. (Cl 92-13). Process of retting hemp, separating the hurds and subjecting them to intermittent digestion with alkaline reagents.

2,080,557. Chain machine for the production of wood chips or shavings. Giuseppe Bravi, Varese, Italy. Filed Jan. 5, 1935. 7 claims. (Cl. 144-187).

2,080,616. Precipitated finely divided calcium carbonate. George Lynn and Edward M. Allen, assignors to Pittsburgh Plate Glass Company, Pittsburgh, Pa. Filed March 17, 1933. 2 claims. (Cl. 23-66). Finely divided carbonate is dispersed in an alkaline solution, the pH of which is maintained between 9.5 and 11.5.

2,080,619. Method and machine for manufacturing paper tubes, especially conical tubes. Christian Majer, Tubinger, Germany. Filed June 1, 1934. 14 claims. (Cl. 93-79).

2,080,734. Renoval adhesive unit. Arthur B. Mull, assignor to Marathon Paper Mills Company, Rothschild, Wis. Filed Sept. 1, 1936. 3 claims. (Cl. 24-67). A base sheet coated on one face with a pressure sensitive adhesive and a peelable cover strip protecting said adhesive coating.

2,081,112. Method of producing light precipitated chalk. Noel Statham and Thomas G. Leek, assignors to West Virginia Pulp and Paper Company, New York, N. Y. Filed Jan. 7, 1932. 8 claims. (Cl. 23-66). A fine mist of milk of lime is maintained in the presence of carbon dioxide at 50 to 60 deg. C.

May 25, 1937

2,081,267 Bleached cellulosic product. John Campbell and Lancelot O. Rolleston, assignors to International Paper Company, New York, N. Y. Filed May 4, 1934. 13 claims. (Cl. 92-3). Pulp bleached at a dry fiber content of more than 15 per cent by gaseous chlorine, said pulp having a high alpha cellulose content.

2,081,308. Composite fabrics and their manufacture. William Wallace Rowe, assignor to The Paper Service Company, Lockland, Ohio. Filed May 10, 1934. 20 claims. (Cl. 154-46).

2,081,320. Doctor blade for rolls, traveling webs, and the like. James Roy Burgess, assignor to Canadian Wallpaper Manufacturers Limited, Toronto, Canada. Filed Aug. 10, 1935. 1 claim. (Cl. 91-18).

2,081,324. Machine for waxing paper. Lloyd L. Dodge, assignor to Rhinelander Paper Company, Rhinelander, Wis. Filed March 9, 1935. 6 claims. (Cl. 91-46). Converter apparatus for conditioning and waxing paper.

2,081,327. Process for bleaching. Ehrhart Franz, Leipzig, Germany. Filed Feb. 23, 1934. 7 claims. (Cl. 8-2). Bleaching with hydrogen peroxide in an acid solution by an addition of sulphuric acid in combination with an alkaline sulphate, boric acid, phosphoric acid and the organic acids.

2,081,456. Paper making apparatus. Charles W. Howard, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed July 11, 1936. 15 claims. (Cl. 91-55). A series of shaving blades having water guiding surfaces inclined downward and away from the web for mechanical separation of water.

2,081,583. Roll adjustment for paper box machines or the like. Thomas S. Fitchett, assignor to F. X. Hooper Company, Inc., Glen Arm, Md. Filed May 4, 1936. 8 claims. (Cl. 93-58.2). Means for adjusting rolls on corrugated board machine.

2,081,626. Apparatus and method for sealing waxed wrappers. Ralph A. Hayward, assignor to Kalamazoo Vegetable Parchment Company, Parchment, Mich. Filed Dec. 31, 1935. 14 claims. (Cl. 93-2).

2,081,642. Indurating composition for concrete. Edward W. Scripture, Jr., Shaker Heights, Ohio. Filed Feb. 4, 1936. 11 claims. (Cl. 106-27). Waste sulphite liquor and calcium chloride are used.

2,081,643. Indurating composition for concrete. Edward W. Scripture, Jr., Shaker Heights, Ohio. Filed Feb. 5, 1937. 7 claims. (Cl. 106-27). Waste sulphite liquor and alkali metal silicate are used.

2,081,740. Method and apparatus for making fibrous articles. Ralph A. Farnham, Herkimer, N. Y. Filed April 3, 1936. 2 claims. (Cl. 92-54).

2,081,759. Flanged head for paper containers and method of making the same. George Arlington Moore, assignor to Humoco Corporation, Louisville, Ky. Filed July 17, 1934. 20 claims. (Cl. 93-51).

2,081,765. Acoustical structure. Theodore M. Prudden, Hingham Center, Mass. Filed May 21, 1935. 13 claims. (Cl. 154-44). A flexible sound absorbing blanket comprising a stack of resonant paper sheets of different weights.

June 1, 1937

2,081,908. Container sealing machine. Irving E. Black, Frederick J. Hoffer and Henry B. Silver, assignors to Plastic Seal Corporation, Brooklyn, N. Y. Filed Jan. 5, 1934. 25 claims. (Cl. 226-80).

2,081,910. Forming machine. Harold C. Coppins, assignor to F. N. Burt Company, Limited, Toronto, Ontario, Canada. Filed Dec. 3, 1932. 83 claims. (Cl. 93-40). Box forming machine.

2,081,911. Applying machine. Harold C. Coppins, assignor to F. N. Burt Company, Limited, Toronto, Ontario, Canada. Filed Dec. 3, 1932. 50 claims. (Cl. 93-54.1).

2,081,912. Applying machine. Harold C. Coppins, assignor to F. N. Burt Company, Limited, Toronto, Ontario, Canada. Filed Dec. 16, 1932. 52 claims. (Cl. 93-55.1).

2,081,913. Forming and assembling machine. Harold C. Coppins, assignor to F. N. Burt Company, Limited, Toronto, Canada. Filed March 29, 1933. 61 claims. (Cl. 93-43).

2,081,945. Means and method of drying coated flexible webs. Peter J. Massey, William F. Thiele and Bert F. Raprager, assignors of nine-tenths to Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., and one-tenth to Peter J. Massey. Filed Nov. 27, 1935. 3 claims. (Cl. 34-24).

2,081,952. Acoustical construction. John S. Parkinson, assignor to Johns-Manville Corporation, New York, N. Y. Filed Dec. 17, 1934. 11 claims. (Cl. 154-44).

2,081,953. Sound damping structure. Leslie S. Perry, assignor to Johns-Manville Corporation, New York, N. Y. Filed Sept. 8, 1932. 7 claims. (Cl. 154-44).

2,082,086. Carton closing machine. John C. Vergobbi, assignor to Pneumatic Scale Corporation, Limited, Quincy, Mass. Filed April 13, 1935. 11 claims. (Cl. 93-44.1).

2,082,114. Apparatus and method for making and delivering wrappers. Carl Littlefield, assignor to Battle Creek Bread Wrapping Machine Company, Battle Creek, Mich. Filed March 2, 1934. 15 claims. (Cl. 154-2). Method of laminating a band and a waxed web.

2,082,182. Manufacture of abrasive articles. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Nov. 20, 1931. 4 claims. (Cl. 91-68).

2,082,186. Adhesive applying mechanism for paper package making machine. Edwin G. Staude, Minneapolis, Minn. Filed Oct. 30, 1933. 11 claims. (Cl. 91-51).

2,082,278. Oil and moistureproofing composition and products made therefrom. Robert R. Ferguson, Chevy Chase, Md., assignor of one-fourth to John G. Graham, Alexandria, Va., and one-fourth to Paul V. Rogers, Chevy Chase, Md. Filed Sept. 9, 1935. 20 claims. (Cl. 154-50). A laminated paper product, impregnated with a hydrogenated oil and rubber.

2,082,364. Moisture tester. Arthur O. Storé, Regina, Saskatchewan, Canada. Filed Dec. 19, 1933. 13 claims. (Cl. 175-183). Electrical conductivity is determined of substance under constant pressure.

2,082,365. Box making machine. Clayton Straw and Charles H. George, assignors to Kingsbury and Davis Machine Company, Contoocook, N. H. Filed Oct. 31, 1935. 20 claims. (Cl. 93-51).

2,082,409. Method of and apparatus for forming fibrous articles. George James Manson, Hawkesbury, Ontario, Canada. Filed Jan. 8, 1934. 6 claims. (Cl. 92-57).

2,082,411. Paper cleaning device. Carle J. Merrill, Portland, Maine. Filed Aug. 20, 1935. 5 claims. (Cl. 15-14). Machine for cleaning the surface of a travelling web of paper.

2,082,559. Method of coating fibrous material. Morgan J. Vittengl, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Sept. 1, 1934. 4 claims. (Cl. 91-68). Method of waterproofing with rubber and mica.

2,082,565. Machine for assembling cartons. Leon Benoit, New York, N. Y. Filed Sept. 6, 1935. 7 claims. (Cl. 93-6).

2,082,635. Web control mechanism. Robert McC. Johnstone, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed Aug. 27, 1936. 5 claims. (Cl. 242-76). Method of controlling the side register of a flowing web of flexible material.

June 8, 1937

2,082,854. Laminated products and the method of making. Leslie Thompson Sutherland, assignor to The Barrett Company, New York, N. Y. Filed Nov. 25, 1932. 20 claims. (Cl. 154-2). Use of a mixture of coumarine resin and an oil-soluble phenolic resin.

2,083,074. Method and apparatus for determining the consistency of pulp suspensions. Otto Maass, Montreal, Quebec, Canada. Filed Oct. 1, 1935. 3 claims. (Cl. 175-183). Electrical conductivity method.

2,083,124. Machine for making, filling, closing and wrapping bags. Adolf Rambold, Dresden, Germany. Filed May 2, 1936. 43 claims. (Cl. 93-4).

2,083,165. Composite slab, block or tile. Eric Russell Harrap, Chorlton-cum-Hardy, Manchester, England. Filed Nov. 7, 1934. 8 claims. (Cl. 108-10). A slab of asbestos, two plane sheets enclosing a corrugated sheet of the same or similar composition.

2,083,206. Safety-paper. Walther Schoeller, Duren/Rhineland, Germany. Filed Feb. 8, 1935. 11 claims. (Cl. 154-46). One layer contains metal salts and a second a chemical substance which will react with the salt.

2,083,273. Production of waxed paper. Charles H. O'Neil, assignor to Nashua Gummed and Coated Paper Company, Nashua, N. H. Filed March 22, 1935. 7 claims. (Cl. 91-55). Means of applying wax coating to one face only.

2,083,280. High quality products from cellulose. Erik Bror Fredrik Sunesson, Skoghall, Sweden. Filed June 29, 1934. 2 claims. (Cl. 8-2). An alkaline pulp is bleached up to 60 per cent with hypochlorite, then with chlorine, and finally with hypochlorite, with intermediate alkaline treatments.

2,083,294. Process for bleaching pulp. Francis J. Cirves, Manistee, Mich. Filed May 16, 1932. 2 claims. (Cl. 8-2). Pulp is mixed with hydrated lime and treated with liquid chlorine.

2,083,341. Tube roll mechanism for paper making machines. William C. Nash, Neenah, Wis., assignor of one-fifth each to Mary Jones, William M. Nash, Roy A. Nash and Marie Duvall Nash. Filed Nov. 13, 1935. 2 claims (Cl. 92-44).

2,083,342. Translating paper machine tube roll. William C. Nash, Neenah, Wis., assignor of one-fifth each to Mary Jones, William M. Nash, Roy A. Nash and Marie Duvall Nash. Filed July 11, 1936. 4 claims. (Cl. 92-44).

2,083,351. Manufacture of corrugated paper cartons. Melvin H. Sidebotham, assignor to Specialty Automatic Machine Company, Medford, Mass. Filed July 29, 1935. 16 claims. (Cl. 93-49).

2,083,352. Embossing means for envelope making machines. Ferdinand L. Smithe, assignor to F. K. Smithe Machine Co., Inc., New York, N. Y. Filed Dec. 18, 1930. 10 claims. (Cl. 93-73).

2,083,418. Sampling tool for pulp or the like. Arthur B. Andrews, Auburn, Maine. Filed Dec. 11, 1933. 2 claims. (Cl. 83-15).

2,083,441. Lacquer coated sheet material and method of making the same. Frederick H. Frost, assignor to S. D. Warren Company, Boston, Mass. Filed Feb. 6, 1936. 11 claims. (Cl. 91-68). Paper is treated with a slack-sizing mineral coating, dried, calendered and a top coating of lacquer applied.

2,083,445. Device for treating wood and the like. Otto Runo Hellborg and Gunnar Arvid Nyberg, Stockholm, Sweden. Filed Sept. 21, 1934. 3 claims. (Cl. 144-208). An apparatus for loosening the bark of timber prior to barking by means of a liquid.

June 15, 1937

2,083,538. Bottle collar. Harry F. Affelder, Cleveland Heights, Ohio. Filed May 14, 1934. 1 claim. (Cl. 40-4).

2,083,539. Machine and process for making bottle collars and the like. Harry F. Affelder, Cleveland Heights, Ohio. Filed Nov. 12, 1934. 19 claims. (Cl. 93-7).

2,083,575. Method of modifying cellulose pulp for paper making purposes. Izador J. Novak and Albert L. Clapp, assignors to Raybestos-Manhattan, Inc., Bridgeport, Conn. Filed Sept. 1, 1933. 6 claims. (Cl. 92-13). Pulp is soaked in a mercerizing solution of caustic soda without disturbing the relation of the fibers.

2,083,577. Cutting and marking device for sheet material. Thomas C. Perry, by Thomas Edison Pafford, administrator, Sand Springs, Okla. Filed July 30, 1936. 11 claims. (Cl. 164-41).

2,083,731. Absorbent article-saturating apparatus. Stuart P. Miller, assignor to The Barrett Company, New York, N. Y. Filed Nov. 1, 1932. 18 claims. (Cl. 91-46). Apparatus for saturating porous conduits.

2,083,744. Manufacture of sheeted cellulose fiber adapted for conversion into cellulose derivatives. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Feb. 10, 1936. 12 claims. (Cl. 260-10). Method of drying pulp, and converting it into chips.

2,083,817. Water extracting device for paper machines and method of making paper. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed May 3, 1935. 9 claims. (Cl. 92-38).

2,083,818. Cylinder paper machine and method of making paper. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed May 3, 1935. 14 claims. (Cl. 92-38). Method of drying paper.

2,083,819. Cylinder paper machine and process of making paper. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed June 12, 1935. 19 claims. (Cl. 92-43). Method of drying paper.

2,083,884. Wastepaper de-inking and de-fibering process and apparatus. Harold Donald Wells, Glen Falls, N. Y. Filed Sept. 24, 1932. 26 claims. (Cl. 92-20).

2,083,929. Process of making a beater finish. Earl P. Stevenson and Howard J. Billings, assignors to The Richardson Company, Lockland, Ohio. Filed Feb. 20, 1933. 11 claims. (Cl. 92-21). Use of a resin of cresylic acid, formaldehyde and an alkaline catalyst, the fiber-resin mixture being characterized by readily assimilating water.

2,083,969. Means for forming laminated tubes from web material. Charles T. Walter, assignor to Industrial Patents Corporation, Chicago, Ill. Filed June 5, 1935. 2 claims. (Cl. 93-82).

2,084,026. Transparent printed wrapper and method of making the same. Irving Gurwick, assignor to Shellmar Products Company, Chicago, Ill. Filed May 12, 1932. 6 claims. (Cl. 41-21).

2,084,106. Paper or cardboard carton or container. Henry William Samuel Palmer, Bournemouth, and James Harrington, London, England. Filed Feb. 19, 1935. 2 claims. (Cl. 229-17).

2,084,272. Plastic composition and articles and method of making the same. Alexander J. Auchterlonie, Grosse Pointe, Mich. Filed Aug. 31, 1936. 20 claims. (Cl. 92-3). Highly absorptive material from annual plants is formed into sheets without destructive beating.

2,084,278. Apparatus for and method of deckling paper. Courtland B. Griffin, assignor to Carew Manufacturing Company, South Hadley Falls, Mass. Filed March 25, 1936. 8 claims. (Cl. 92-68). The edges of one side of a stack of paper are moistened and a stream of fluid under pressure is directed against the edges to remove parts thereof.

June 22, 1937

2,084,313. Noncohering, transparent sheeting. Norman F. Beach, assignor to Eastman Kodak Company, Jersey City, N. J. Filed July 26, 1934. 2 claims. (Cl. 18-57). Thin, transparent, cellulose acetate sheet of the wrapping type containing finely divided chalk.

2,084,358. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed May 7, 1934. 22 claims. (Cl. 91-68). Method of distributing in a fibrous web containing alkaline filler a substantially water-insoluble organic liquid.

2,084,362. Absorbent pad and method of making the same. Margaret M. Visscher and Walter L. McMillan, Los Angeles, Calif., said McMillan assignor to said Visscher. Filed July 5, 1934. 13 claims. (Cl. 154-29).

2,084,490. Drier felt. James E. Hooper, assignor to William E. Hooper and Sons Company, Woodberry, Md. Filed Jan. 16, 1937. 6 claims. (Cl. 24-33).

2,084,598. Color calibration machine. Fred A. Rogers, assignor to Rainbow Laboratories, Portland, Oreg. Filed April 8, 1935. 1 claim. (Cl. 88-14).

2,084,922. Corrugated wrapper. Melvin H. Sidebotham, assignor to Specialty Automatic Machine Company, Medford, Mass. Filed June 12, 1935. 3 claims. (Cl. 229-90).

2,084,980. Matboard handling machine. Orland Russell Sweeney, assignor to State of Iowa for benefit of Iowa State College of Agriculture and Mechanical Arts. Filed Dec. 31, 1934. 30 claims. (Cl. 92-39).

June 29, 1937

2,084,981. Shingle. Albert J. Anderson, assignor to J. E. Smith and Co., Inc., Waterbury, Conn. Filed June 13, 1934. 9 claims. (Cl. 260-108).

2,085,017. Automatic machine for making paper containers. Luther K. Funkhouser and Ralph W. Carnahan, Dayton, Ohio; said Carnahan assignor to said Funkhouser. Filed April 7, 1934. 41 claims. (Cl. 93-39).

2,085,034. Method of manufacturing fiber containers. Donald G. Magill, assignor to American Can Company, New York, N. Y. Filed Nov. 13, 1935. 19 claims. (Cl. 93-39.1).

2,085,128. Paper dryness control. Stephen A. Staege, assignor to Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. Filed May 26, 1934. 6 claims. (Cl. 34-48). Electrical control of the rate of admission of the drying medium to the drier element.

2,085,151. Alkali abietate compositions and their production. Edmund A. Georgi, assignor to Hercules Powder Company, Wilmington, Del. Filed June 13, 1934. 9 claims. (Cl. 260-108). Method of crystallizing a neutral alkali metal abietate.

2,085,152. Alkali abietate compositions and their production. Edmund A. Georgi, assignor to Her-

cules Powder Company, Wilmington, Del. Filed June 13, 1934. 8 claims. (Cl. 260-108). Crystallization of a neutral alkali metal abietate.

2,085,163. Paper. Herbart A. Lubs, John R. Roberts and Edwin R. Laughlin, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed April 16, 1935. 10 claims. (Cl. 8-5). Surface colored paper is impregnated with an aqueous solution of an acetate of deacetylated chitin.

2,085,373. Wax coated paper. Clarence M. Loane and Bernard H. Shoemaker, assignors to Standard Oil Company, Chicago, Ill. Filed Feb. 7, 1936. 7 claims. (Cl. 91-68). The paraffin contains a small amount of a condensation product of chlorinated paraffin and an aromatic hydrocarbon.

2,085,384. Cushion sheet. William G. D. Orr, assignor to A. B. Dick Company, Chicago, Ill. Filed Sept. 1, 1936. 2 claims. (Cl. 41-3.5). An open, porous and resilient sheet of paper used as a cushion for a stencil-sheet.

2,085,417. Apparatus for corrugating paper. Joseph D. Cramer, assignor to The Chase Bag Company, New York, N. Y. Filed Aug. 24, 1935. 8 claims. (Cl. 154-30).

2,085,473. Flexible impervious and weatherproof material. William Wallace Rowe, assignor to The Paper Service Company, Lockland, Ohio. Filed Jan. 30, 1931. 16 claims. (Cl. 154-50). A body substance cemented by means of a bituminous adhesive between layers of creped paper, one layer being sized so as to be impervious to bitumen.

2,085,477. Container fabricating machine. Henry T. Scott, assignor to The American Paper Bottle Company, Toledo, Ohio. Filed Oct. 16, 1934. 13 claims. (Cl. 93-7).

2,085,478. Folding mechanism. Henry T. Scott, assignor to The American Paper Bottle Company, Toledo, Ohio. Filed Oct. 16, 1934. 17 claims. (Cl. 93-6).

2,085,553. Shingle. Norman P. Harshberger, assignor to Bakelite Building Products Co. Inc., New York, N. Y. Filed Sept. 29, 1931. 19 claims. (Cl. 108-7).

2,085,554. Locking shingle. Harry Forbes, assignor to Bakelite Building Products Co. Inc., New York, N. Y. Filed April 3, 1931. 11 claims. (Cl. 108-7).

2,085,555. Pliable shingle. Otto J. Kuhn, assignor to Bakelite Building Products Co. Inc., New York, N. Y. Filed July 13, 1931. 1 claim. (Cl. 108-7).

2,085,675. Safety paper and method of making same. Francis L. Simons, assignor to George La Monte and Son, Nutley, N. J. Filed Feb. 4, 1935. 8 claims. (Cl. 91-67.95). A mono-nitrogen substituted naphthylamine is incorporated in the paper.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Sulphite Process

Effect of Varying the Concentration of Combined Sulphur Dioxide in Soda Base Sulphite Pulping. G. H. Chidester. Paper Trade J. 104, No. 6: 39-42 (Feb. 11, 1937).—The yields and strengths of pulps that have been digested to approximately the same degree in approximately the same time with soda base sulphite liquors of constant initial total sulphur dioxide concentration but with increasing combined sulphur dioxide, passed through a maximum at 2 to 3% combined. Mixtures of sodium monosulphite and bisulphite produced inferior pulps of low yields. Monosulphite liquors produced the highest strengths, but low yields. Slash pine heartwood can be pulped with a liquor of high combined sulphur dioxide content.—A.P.-C.

Unbleached Sulphite Pulp from Western Hemlock. G. H. McGregor, W. N. Kelly and H. R. Heuer. Paper Trade J. 104, No. 4: 31-40 (Jan. 28, 1937).—An outline of variables attendant to the operation, testing and instrumentation relative to the manufacture of unbleached sulphite from Western hemlock in the 200-ton mill of Weyerhaeuser Timber Co. at Longview, Wash.—A.P.-C.

Some Causes for Non-Uniformity in Sulphite Pulp Manufacture. O. E. Anderson. Paper Trade J. 104, No. 6 42-44 (Feb. 11, 1937).—The 1% caustic soda solubility test affords a reliable, convenient check on wood quality. Its relationship to such factors as tear resistance and yield is shown, both of which decrease with increasing caustic solubility. Mixing of species of wood in the digester produces variations in pulp quality, the wood of higher lignin content producing pulp of higher lignin content. Various types of penetration curves in cooking are shown, the penetration at higher temperatures (below the critical point) giving pulp of higher alpha-cellulose content.—A.P.-C.

Heat Balance Calculation on Sulphate Recovery System. W. T. Webster. Paper Trade J. 104, No. 6: 45-46 (Feb. 11, 1937).—An example is given of the calculation of the heat balance for a spray type unit with waste heat boiler, superheater, air preheater and water walls. In the case taken, the overall efficiency was 70.79%. —A.P.-C.

A Sulphite Acid Slide Rule. O. K. Graef. Paper Industry 18: 753-754 (Dec., 1936).—A description of the construction and manipulation of a slide rule designed to obtain the total, free and combined sulphur dioxide contents of sulphite acid at a single setting.—A. P.-C.

The Recovery of Sulphur Dioxide. W. L. Beuschlein. Pacific Pulp Paper Ind. 10, No. 6: 20-21 (June, 1936).—A brief explanation of the principal factors governing the absorption of sulphur dioxide in limestone towers for the production of sulphite acid. Curves are given showing the equilibrium conditions of the system CaO-H_2O-SO_2 at 25° C.—A.P.-C.

A Study Concerning the Kinetics of the Sulphite Process. A. J. Corey and O. Maass. Can. J. Research 14B: 335-345 (1936).—Delignification rates of spruce wood chips and wood meal have been investigated under carefully controlled conditions at temperatures ranging from 100° to 140° C. The rates are shown to be in only approximate agreement with the unimolecular law, but the change in the rate of delignification with temperature obeys the equation of Arrhenius.—A.P.-C.

Laboratory Studies of Sulphite Waste Liquor. H. K. Benson. Pacific Pulp Paper Ind. 10, No. 11: 23-25 (Nov., 1936).—The work carried out at the University of Washington, Seattle, during the past few years on the problem of sulphite waste liquor pollution is briefly reviewed. Experiments showed that addition of small quantities of sulphite waste liquor to clay reduces the amount of water required to bring it to given workability, resulting in less shrinkage in drying and consequently in lower breakage of ceramic wares; on the other hand, addition of even small quantities of sulphite waste liquor to Portland cement mixes reduces the compressive strength to such an extent as to render such addition futile. Qualitatively, the presence of sulphite waste liquor in a soil increases both the cohesiveness and the elasticity of its particles. Examples are given of successful use of sulphite waste liquor for laying dust on roads.—A.P.-C.

Manufacture of Fodder Yeast from Sulphite Waste Liquors. L. Scheuring. Angew. Chem. 50, No. 1:51 (Jan. 2, 1937).—The author points out previous experiments with sulphite fodder yeast prepared from the raw technical vinasse without filtration. These experiments had to be discontinued on account of the resulting high mortality (up to 35%) amongst the fish, and the originally planned trials with young pigs were abandoned. Relatively high quantities of metal salts, lead in particular, from the pipes employed for conveying the waste liquor were considered the reason of the unfavorable result. Special attention should be paid to their complete removal in all future experiments.—C. J. W.

Instrumentation Studies. XVII

A Study of the Transparency of Tinted White Glassine Papers and the Development of an Instrument for its Measurement

By The Staff of The Institute of Paper Chemistry

(Continued from July 8, 1937)

4. Distance Between Sample and Photocell. Changes were made in the distance between the photocell and sample in order to determine the optimum distance; in this determination, the factors of importance are magnitude and range of values, and small solid angle. This optimum distance was chosen to give parallel transmittance readings of about 50 per cent for the highest transparent papers of this study. The data in Table V show the parallel transmittance values for photocell distances of 7, 10, and 12 inches. If parallel transmittance for one of these distances is plotted against that for another distance, the change to be noted is that the parallel transmittance values for the low range fall off relatively more rapidly than those for the high range of transparencies. This fact is to be expected from the data given on the angular distribution of the transmitted energy in Table I. This is consistent with the observation that the energy incident on the photocell will decrease approximately proportionally to the inverse square of the distance for the low transparent papers. It is quite evident that no linear relation exists between the parallel transmittance values for these different distances. The range of parallel transmittances varies by a factor of 10 from highest to lowest transparency for these increased distances. However, there was no advantage to be gained by working at these larger distances. Consequently, for convenience of size of the instrument, the distance of 7.5 inches was chosen as a standard distance.

To justify the choice of geometry for this set-up, an experimental arrangement was designed to closely approximate the geometry involved in the actual visual judgment of transparency. Fig. 6 is a schematic diagram of this arrangement. This consists of a tungsten filament headlight lamp and a 50 mm. focal length lens producing approximately parallel light incident on the sample. The sample is a 1 inch diameter disk. The second lens is a 250 mm. focal length lens focusing the parallel light on an iris diaphragm of 5 mm. diameter. The light is then incident on a photronic cell. The solid angle subtended by the average aperture of the iris of the eye at the normal reading distance of 250 mm. is 3.00×10^{-4} steradians. The data obtained by this method are given in Table VI. The parallel transmittance values in this table include two different ratios of incident energy and solid angle subtended by the iris diaphragm. The main features to be observed are:

a. The decrease is parallel transmittance values to 0.17 for the highest transparency for case A. (For definitions of cases A, B, C, see Fig. 6).

b. A large decrease is observed in going from case A to both cases B and C, especially for the low transparent papers.

c. The rate of change of parallel transmittance is very high and increasing rapidly for the most transparent glassine sheets. Hence, it is seen that the method C, which uses the solid angle of approximately 0.0002 steradians, would be extremely useful for high accuracy in distinguishing between sheets of the lacquered glassine class.

TABLE V.—VARIATION IN PARALLEL TRANSMITTANCE WITH DIFFERENT DISTANCES BETWEEN THE SAMPLE AND THE PHOTOCELL.

It will be seen that some samples invert their order of parallel transmittance for different distances between the sample and photocell.

Sample No.	Per Cent Parallel Transmittance: Distance Between Photocell and Sample = 7"	Distance Between Photocell and Sample = 10"	Distance Between Photocell and Sample = 12"
1	91.0	89.7	88.7
2	90.6	90.3	89.7
3	49.0	36.3	32.0
4	47.2	35.6	31.3
5	47.1	34.9	30.5
6	33.5	22.4	19.1
7	33.8	22.2	19.2
8	5.9	3.33	2.6
9	40.7	30.4	25.3
10	39.0	26.4	22.6
11	22.6	13.3	10.3
12	37.5	26.2	22.4
13	43.7	33.1	27.7
14	40.3	30.3	26.1
15	34.5	25.0	21.5
16		(No Data)	
17	23.9	16.7	14.2
18	20.4	12.9	10.8
19	46.0	36.0	31.0
20	39.2	29.5	25.0
21	11.7	6.77	5.42
22	25.5	17.9	14.2
23	17.6	10.3	8.2
24	25.8	15.9	12.9
25	34.8	24.8	20.5

d. Given two papers which are just perceptibly different visually: The increase in instrumental percentage difference between the two samples gained by going to extreme case C is three times for papers of parallel transmittance of 40 per cent and twice for papers of a parallel transmittance of about 20 per cent.

e. The fluctuations that arise in the correlation of the A, B and C measurements with the adopted method can hardly be ascribed to sample variations. They must be due to the variations of the transmittance with scattering angle as this angle goes to zero. This can be expected because of the essential change of shape of scattering centers as well as the nature of the air cellulose interfaces in the sheet.

The following reasons are given for not choosing the optical system given under description of set-up A:

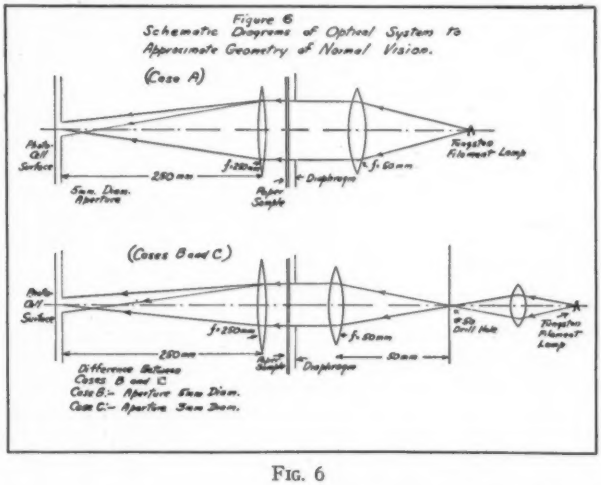

FIG. 6

a. Correlation of visual grading as judged on the set of samples which showed the poorest correlation with parallel transmittance readings in not appreciably better for the case A measurements than for the regular ones. This fact can be seen by reference to Fig. 13.

b. Values of total transmittance could not be measured for the same area of sample as that used for parallel transmittance by a simple shift of the sample.

c. The increased sensitivity by the use of A would enhance the magnitude of the fluctuations obtained from place to place on the sheet.

d. From the point of view of a practical instrument the adjustment and standardization of many instruments would be more difficult.

e. The range of parallel transmittance values from 40 down to 5 per cent for good glassine to supercalendered sulphites is more appealing from a commercial point of view than is the scale from 17 per cent down to 0.5 per cent for these same papers on the "A" instrument.

5. Apertures. The size of the sample area illuminated is controlled by the aperture between the source of light and the lens. This aperture must be adjusted so that the area of the sample is reproducible to within 2 per cent. This condition must be satisfied, because the sample area influences the T_p (parallel transmittance) values in two ways. First, the angular range of the scattered rays is defined in part by this area as is shown in equation (8). Second, the values of $g(\theta r)$ are sensitive functions of this area, due to the deviation of the light beam from the ideally parallel condition.

Similarly, the area of the photocell surface must be equally closely controlled.

Any errors made in machining or mounting of the apertures may be compensated by the adjustment of these factors during the calibration procedure.

Sensitivity

The sensitivity is defined as the ratio of percentage change in parallel transmittance to percentage change in photocurrent. Recalling the definition of $T_p = i_p/i_o$, it is seen that the sensitivity is unity. That is, a one per cent change in photocurrent corresponds to a one per cent change in parallel transmittance. The photocurrent can be read to 0.2 of a scale division. Hence, the parallel transmittance can be read to 0.2 per cent at full scale, 0.4 per cent at 50, and 2 per cent at 10. These percentages are expressed as percentages of the actual values of parallel transmittance. The sensitivity of parallel transmittance expressed as a function of a sensation unit corresponding to just perceptible differences of transparency has not been determined. This is due to the fact that the samples were visually graded from highest to lowest without any answer to the question "How much different?" being given. As an approximation to determining this sensitivity, the sensitivity of parallel transmittance given as a function of "image visibility" is approximately 2 in the range from 40 to 20 per cent parallel transmittance.

TABLE VI.—PARALLEL TRANSMITTANCE VALUES ARE GIVEN FOR SAMPLES VISUALLY GRADED BY OBSERVER NO. 11, AS MEASURED BY THE ADOPTED METHOD AND BY THREE VARIATIONS OF A METHOD EMPLOYING GEOMETRY MORE NEARLY APPROXIMATING THAT OF NORMAL VISION USED IN VISUALLY GRADING THE SAMPLE. THE "EYE ANALOGY" METHODS ARE GRAPHICALLY DESCRIBED IN FIGURE 6.

Sample No.	Per Cent Parallel Transmittance			
	Adopted Instrument	Method A	Method B	Method C
3	37.0	14.70	9.30	8.00
4	38.0	12.60	6.90	5.80
5	37.7	15.10	9.50	7.80
6	26.1	9.50	4.75	3.66
7	30.7	11.10	....	....
8	7.1	1.18	0.95	0.55
9	33.8	12.00	7.85	5.90
10	31.5	9.70	6.10	4.65
11	15.2	3.38	....	1.40
12	30.6	10.00	6.40	5.00
13	39.5	17.20	13.60	10.50
14	30.6	9.35	5.95	4.35
15	27.5	8.70	5.70	4.45
16	24.7	8.00	5.40	4.35
17	19.7	5.30	....	....
18	17.6	4.65	2.98	2.10
19	36.5	15.10	10.00	8.70
20	38.6	16.10	11.20	9.70
21	10.4	2.12	1.19	0.78
22	21.5	6.63	3.80	3.30
23	16.5	3.74	2.40	1.45
24	19.7	5.68	3.30	2.56
25	21.8	6.70	4.00	3.20

Note: Some of the fluctuations between methods A and B are to be attributed to variations of single readings from the average of five readings as quoted for method A.
Columns 2 and 3 are averages of five readings.
Columns 4 and 5 are single readings.

TABLE VII.—DATA SHOWING VARIATIONS OF PARALLEL TRANSMITTANCE WITH VARIATIONS IN RELATIVE HUMIDITY FROM A MAXIMUM OF 70% TO PRACTICALLY ZERO (CORRESPONDING TO VAPOR PRESSURE OF WATER VAPOR OVER $CaCl_2$). THE VALUES OF PARALLEL TRANSMITTANCE ARE QUOTED ON MAGNIFIED SCALE.

Sample No.	T_p Samples in Air 70% R.H. 1 P.M. 8/6/35	T_p Samples from Desiccator 3 P.M. 8/6/35	T_p Samples in Air 70% R.H. 4 P.M. 8/6/35	T_p Samples in Air 70% R.H. 8 A.M. 8/7/35
5	77.5	80.8	77.0	77.3
3c	99.0	98.8	98.6	98.4
6	84.0	86.6	84.2	84.0
3d	95.4	95.6	95.0	94.8
	11:30 A.M. 8/6/35	1 P.M. 8/6/35	3 P.M. 8/6/35	From Desiccator 4 P.M. 8/6/35
6b	102.0	106.0	102.0	104.4
1c	90.0	91.0	90.6	90.2
4b	84.4	87.5	84.6	86.6
18	40.4	...	40.6	40.0
	4 P.M. 8/6/35	8 A.M. 8/7/35	12 A.M. 8/7/35	
7c	67.8	68.8	67.4	
8	62.8	66.0	62.6	
11	55.8	57.8	55.0	
12	67.4	69.4	66.4	

These data indicate a maximum change of 3 units on the arbitrary scale. This difference would correspond to a variation of 1% on the regular parallel transmittance scale. As long as the relative humidity did not exceed 70%, it would be safe to say that normal daily variations in humidity would cause variations in parallel transmittance of less than 0.5%.
Note: These samples were not visually graded.

Reproducibility

As was stressed above, the reproducibility from instrument to instrument is influenced by all of the factors mentioned in equation (15). The headlight lamps and the lens are standard stock products which show little fluctuation of characteristics between different pieces. The photocells to be used in the production of commercial instruments will be chosen for uniformity of spectral response, as well as for uniformity of response over the area of the photocell used. This method of choosing photocells eliminates the errors which would contribute to the lack of reproducibility as influenced by these factors. The microammeter is a standard type of instrument which is guaranteed by the manufacturers to have sufficient accuracy and linearity of scale so that no appreciable errors would be introduced by these possible variables. The choice of a standard fixed resistor to be placed in series with the lamp and battery has been made. Consequently, the errors which might be introduced by change in color temperature of the lamp for the deeply colored range of glassines is eliminated. After the elimination of these possible variations, and after the necessary care has been taken in the construction of the optical parts, the one factor which principally contributes to the reproducibility is the focus adjustment. The percentage change of parallel transmittance with change in focus is greatest for the sheets of low transparency.

The factors which influence the reproducibility on a given sheet are the following ones:

1. Fluctuations in parallel transmittance due to

formation and calendering variations on the sheet. Fluctuations of as much as 10 per cent of the average of five readings may occur due to these causes. It has been observed that these fluctuations represent visible differences in transparency. These fluctuations have been observed on samples 6 x 6 inches, as well as on larger samples.

2. Differences depending on whether the felt or wire side faced the photocell, have not been observed.

3. The effects of cockle are of the order of one per cent of full scale at the outside. These effects are estimated by taking parallel transmittance values for the sample pressed between two glass plates and simply placed between the glass plates.

The fluctuations which might arise due to the visual difference between viewing lines of printing parallel to the machine and the cross directions have been eliminated by the choice of the circular sample area.

Normal variations in the relative humidity of the air of 70 per cent R. H. or less will contribute fluctuations of less than 0.5 per cent in the parallel transmittance of the sheets. The data in Table VII show the variations in parallel transmittance between sheets in air at 70 per cent relative humidity and those placed in a desiccator. It is seen that for the humidity range chosen, the parallel transmittance decreases with increase of relative humidity. The maximum change in parallel transmittance is seen to be one per cent of full scale. It is to be noted that there was no appreciable hysteresis effect noticed. The changes in parallel transmittance with relative humidity have not been investigated over wide enough a range to permit generalizations to be drawn.

Calibration

As mentioned in the section on *Focus*, the values of parallel transmittance show a minimum at the best approach to a parallel beam. This fact alone would seem to provide a sensitive enough test for calibration purposes. In order to check the alignment and focus condition, so-called transparency standards were made. These standards consist of pieces of photographic plate glass which are ground with emery powder to the desired value of parallel transmittance. Each piece after having been ground is cemented to another piece of clear glass. This construction provides for easy cleaning of the standards and prevents dust from accumulating in the scratches of the ground surface.

The standards were first required for an instrument to be used with an arbitrary scale rather than the direct reading parallel transmittance scale. It was thought that these standards would be the closest permanent approximation to the optical analogy of a glassine sheet.

TABLE VIII.—VARIATIONS OF PARALLEL TRANSMITTANCE (ARBITRARY SCALE) AS MEASURED RELATIVE TO A GROUND GLASS STANDARD FOR DIFFERENT FOCUS ADJUSTMENTS.

Sample No.	"Parallel" Parallel Trans.	"Diverging" Parallel Trans.	"Converging" Parallel Trans.	"Parallel" Parallel Trans.
4	105	107	110	105
5	104.5	104	108	104
7	79	80.5	82	80
8	11	12	12	11
9	90	92	93	91
11	38	39	39	38
12	82	84	85	83
14	82.5	82	86	82.5
16	63	64	65	63.5
18	45	46	47	45
20	103	104	107	103
22	57	58	59	58
24	52	52.5	53	52.5
25	58	58	60	58

Note: These samples were not visually graded. Values are quoted on an arbitrary scale. "Parallel", "Diverging", "Converging" refer to same conditions of focus as defined in Table III. The last column under "Parallel" represents results after the instrument had been returned to the same state of adjustment as that for results of the first column.

The precautions necessary in using the standards are as follows:

1. The variation of the transmission of the standards must be minimized in order that too much care need not be taken in correctly placing the standards in the beams.

2. The parallel transmittance of the standards is not as sensitive a function of the state of focus as is that of the glassine sheets. Hence, in the process of calibration, smaller tolerance limits must be set on the values of the ground glasses in order that the values of glassines reproduce as closely as is necessary. This condition is more important in the case of an arbitrary scale, for it is possible here to have the arbitrary parallel transmittance values obtained from measurements on one standard relative to another in close agreement and still have the true parallel transmittance scale out of calibration by one to two per cent of full scale. The reason for this last statement is that, to a first approximation, the parallel transmittances for the calibrating range change by a constant multiplying factor. Consequently, the values of the glass standards tend to remain constant relative to each other. Data are presented in Table VIII which show the variation of the parallel transmittance with the state of focus when the glassine papers were run relative to a ground glass standard of parallel transmittance on an arbitrary scale. It is seen that the average percentage increase is about 2 per cent on the arbirtrary scale, which corresponds to 2/3 per cent on the actual scale of parallel transmittance.

TABLE IX.—VALUES OF PARALLEL TRANSMITTANCE, TOTAL TRANSMITTANCE AND TRANSPARENCY RATIO FOR THE SAMPLES VISUALLY GRADED BY OBSERVERS 1—6.

Sample No.	Per cent Parallel Trans.	Per cent Probable Error	Per cent Total Trans.	Per cent Trans. Ratio
3	38.0	±0.6	86.8	43.8
4	35.7	±0.3	88.1	40.5
5	36.1	±1.2	85.6	42.2
6	26.0	±1.1	85.0	30.6
7	28.7	±0.3	85.2	33.7
8	6.8	±0.5	60.7	11.2
9	33.1	±0.6	86.8	38.2
10	32.2	±0.0	85.6	37.6
11	15.3	±0.5	79.1	19.3
12	29.3	±0.3	85.7	34.2
13	38.1	±1.3	87.4	43.6
14	32.4	±0.8	84.8	38.2
15	26.5	±0.0	82.4	32.2
16	24.2	±0.8	80.6	30.0
17	19.7	±0.0	81.8	24.1
18	17.0	±0.4	76.5	22.2
19	36.5	±0.7	85.0	43.0
20	33.8	±0.5	86.0	39.3
21	10.0	±0.4	66.6	15.0
22	20.7	±0.9	80.3	25.8
23	15.8	±0.6	71.3	22.2
24	18.0	±0.4	76.2	23.6
25	16.5	±0.4	76.6	21.5

The probable errors in parallel transmittance are the probable errors for a single observation calculated from the formula

$$\text{P. E.} = .6745 \sqrt{\frac{\Sigma v^2}{n - 1}}$$

where v = mean deviation
n = number of observations.

The Correlation of Visual Grading of Glassine Samples with The Instrumental Values of Parallel Transmittance

Dr. D. B. Wicker collected samples of glassine papers through the courtesy of six different mills. It was thought that these samples would provide a representative cross section of the commercial glassine papers on the market, and, therefore, they would serve as samples worthy of testing the correlation between the visual estimate of the transparency of glassine papers and the objective measure of parallel transmittance.

The correlation of the visual estimate of transparency and the objective measure was carried out in the following manner. Sample 6 x 6 inches were cut from sheets chosen at random from the papers collected by Dr. Wicker. Twenty-three samples were sent to each of four mills. It was requested that the individual mills grade these

papers in decreasing order of transparency. No particular method of observation was suggested, However, the request was made that the method used in grading the samples be described at the time of returning the results of the grading to the Institute. It was also asked that the samples be returned for measurement at the Institute. The samples were not returned by one of the mills. In addition to these observers, one observer was chosen from the Institute. These observers (11 in number) represented men experienced in the grading of glassine papers.

Since no mode of grading was recommended it was thought that the results of the visual grading would be a rigid test of the possible correlation between the visual and instrumental gradings. This thought was carried out in view of the fact that experience gained at the Institute definitely indicated that for samples of closely equivalent transparency, different orderings could be obtained, depending on the conditions of illumination and the distance between the object being viewed and the transparent sheet.

The measurement of parallel transmittance was performed on the first commercial test model of the transparency meter built at the Institute. Due to the observed variations in parallel transmittance obtained on the experimental model, as well as in the thesis work of Dr. Wicker, five measurements of parallel transmittance were taken on each of the sheets submitted to the several mills. The average of these five readings is the quoted value of parallel transmittance used for the correlation with visual grading.

The complete set of data for the samples graded by observers numbers 1 to 6 is presented in Table IX. The values of the parallel transmittance, total transmittance and transparency ratio are averages of five readings taken on each 6 x 6 inch sheet that was visually graded. The probable error of a single observation of parallel transmittance is also quoted. The transparency ratio in per cent is the ratio of the parallel transmittance to total transmittance.

Table X contains the sample numbers and their visual order of transparency as rated by each observer, accompanied by the average value of the parallel transmittance.

A discussion and interpretation of the results given in these tables is given in the following paragraphs.

The samples have been ranked according to decreasing parallel transmittance, and this order has been plotted against the order of decreasing transparency as visually observed. Figure 8 presents the ordering of instrumental values versus visual for observer 10. In order to arrive at a quantitative estimate of the correlation between instrumental and visual rankings, the correlation coefficient has been calculated by a method given on page 132 of "Handbook of Statistics" by H. L. Rietz. For ideal correlation, the correlation coefficient would be unity. The calculated value for the example at hand was 0.973. These coefficients for each group of observers are:

Observer	Correlation Coefficient
1—6	0.964
7—9	0.976
10	0.973
11	0.967

It is to be seen in the case of observer 10 that there are three important inversions; he used the method of observation which is most favorable to the correlation between instrumental and visual ranking.

It would be expected from the correlation coefficients given above that good correlation exists between instrumental and visual methods. The objection to this man-

TABLE X.—RESULTS SHOWING THE VISUAL ORDER OF SAMPLES AS RATED BY OBSERVERS. THE PARALLEL TRANSMITTANCE FOR THESE SAMPLES IS ALSO TABULATED. THE SAMPLES WERE RATED IN DESCENDING ORDER OF TRANSPARENCY FROM 1—23.

Sample	Observer No. 1	2	3	4	5	6	Parallel Trans.
3	2	2	2	2	1	2	38.0
4	1	1	1	1	2	1	35.7
5	4	5	4	6	5	6	36.1
6	12	11	11	12	11	11	26.0
7	11	12	12	11	12	12	28.7
8	23	23	23	23	23	23	6.8
9	6	3	5	4	6	7	33.1
10	9	6	7	8	7	5	32.2
11	19	17	17	17	20	17	15.3
12	10	8	10	10	10	10	29.3
13	5	10	6	5	4	4	38.1
14	8	9	9	7	8	8	32.4
15	13	14	13	13	13	13	26.5
16	14	13	15	14	14	14	24.2
17	15	16	14	16	15	15	19.7
18	20	18	18	20	18	20	17.0
19	3	4	3	3	3	3	36.5
20	7	7	8	9	9	9	33.8
21	22	22	22	22	22	22	10.0
22	17	15	16	19	16	16	20.7
23	21	19	21	21	21	21	15.8
24	16	21	19	15	17	18	18.0
25	18	20	20	18	19	19	16.5

Sample	Observer No. 7	8	9	Parallel Trans.
3	3	2	2	40.5
4	1	1	1	38.4
5	4	4	3	36.2
6	12	12	11	25.4
7	11	11	12	29.5
8	24	24	24	5.4
9	7	6	6	33.4
10	8	8	8	30.6
11	19	18	18	14.6
12	10	10	10	29.5
13	6	7	7	37.8
14	9	9	9	32.7
15	13	13	13	26.4
16	14	14	14	23.3
17	16	17	17	19.5
18	20	20	20	16.6
19	2	3	5	35.6
20	5	5	4	37.4
21	23	22	23	9.4
22	17	16	16	20.9
23	22	23	22	13.8
24	18	19	19	19.1
25	15	15	15	23.7

Sample	Observer 10	Parallel Trans.
3	1	41.6
4	2	36.3
5	4	38.2
6	11	26.2
7	10	30.5
8	23	5.8
9	5	33.6
10	6	30.6
11	20	15.2
12	8	32.3
13	9	36.0
14	12	28.1
15	13	26.4
16	16	21.1
17	18	18.6
18	19	18.2
19	3	37.0
20	7	32.6
21	22	9.3
22	14	23.0
23	21	14.2
24	17	19.6
25	15	27.1

Sample	Observer 11	Parallel Trans.
3	6	37.0
4	1	38.0
5	5	37.7
6	11	26.1
7	9	30.7
8	23	7.1
9	7	33.8
10	8	31.5
11	18	15.2
12	10	30.6
13	2	39.5
14	12	30.6
15	14	27.5
16	13	24.7
17	19	19.7
18	20	17.6
19	3	36.5
20	4	38.6
21	22	10.4
22	16	21.5
23	21	16.5
24	17	19.7
25	15	21.8

ner of quoting correlation is that the samples have been instrumentally ordered by their values of parallel transmittance independent of the actual differences between these samples. Hence, it is to be appreciated that the unit of perceptible differences between the samples varies from sample to sample. Consequently, one does not have the right to order the samples on a scale proportional to the differences between the natural numbers.

The results of this method of ranking, in spite of the objections thereto, are given in Fig. 9. The average ranking of each set of observers is plotted against the instrumental ranking as given by the parallel transmittance. The over-all correlation coefficient is not quoted, in view of the fact that all of the observers did not grade the same samples.

In order to include the actual instrumental differences between the samples, the visual order of the samples is plotted against actual values of parallel transmittance in Fig. 10. It is to be seen that there are sensible fluctuations in the visual ordering of the samples of the same order of magnitude as those of the parallel transmittance values. All that can be said is, that the trend between the visual and instrumental values is real, but that inversions occur. These inversions are to be understood in the light of the fact that arbitrary methods of visual estimation have been used.

In order specifically to illustrate this point, Figs. 11 and 12 were prepared. Fig. 11 presents the visual rank versus parallel transmittance ranking for observers 7, 8 and 9. Fig. 12 gives the visual rank plotted against the parallel transmittance values for these same samples. These data are singled out in view of the fact that it was definitely stated in the report of the visual results of these observers that the samples were placed in contact with a page printed with black letters. These samples have also been graded at the Institute. The method used was to

TABLE XI

Observers 7, 8, 9 Rank	New Rank I. P. C. Observers	Parallel Transmittance of Samples as of New Rank
4	3	40.5
3	4	38.4
20	13	37.8
13	20	37.4
9	13	37.8
13	9	33.4
10	14	32.7
14	10	30.6
11	24	19.1
24	11	14.6
11	18	16.6
18	11	14.6

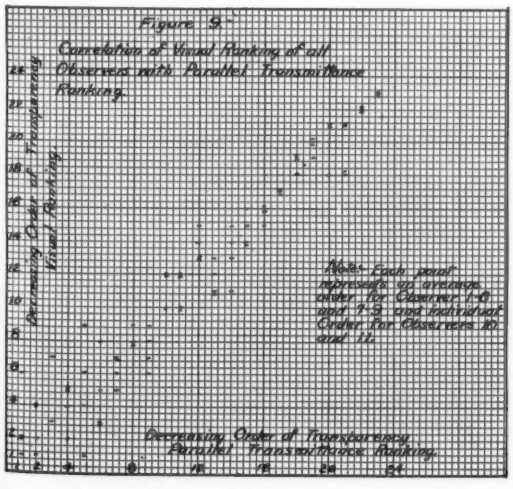
Figure 9
Correlation of Visual Ranking of all Observers with Parallel Transmittance Ranking.
Note: Each point represents an average order for Observers 1-6 and 7-9 and individual Order for Observers 10 and 11.
Decreasing Order of Transparency Parallel Transmittance Ranking.

FIG. 9

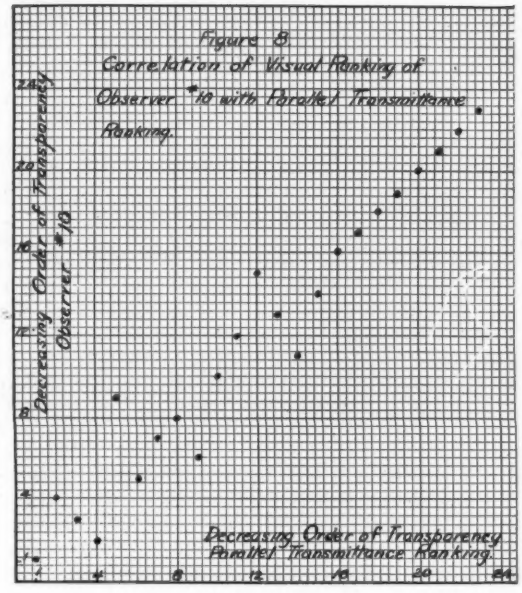
Figure 8
Correlation of Visual Ranking of Observer #10 with Parallel Transmittance Ranking.
Decreasing Order of Transparency Observer #10
Decreasing Order of Transparency Parallel Transmittance Ranking.

FIG. 8

separate the sheet from the printed page and remove the sheet until the existence of printed letters was just noticeable. This method has been successful in visually justifying observable instrumental fluctuation in transparency. The following inversions between instrumental and visual orderings noted in column one of Table XI are thus removed. The first sample in each pair is rated the more transparent.

The average ordering of these samples as ranked by observers 7, 8 and 9 was checked when the same method of observation was used as that specified by them. The one exception was the sample pair 24 and 11 which, at the Institute, was ordered 24 and 11 by all methods of observation.

The general difference observed between the members of each pair of samples chosen for argument was that the more transparent samples, as judged by observers 7, 8 and 9, presented less pronounced surface markings, but the appearance of all areas of the sheet was more diffuse. In other words, there were areas of high transparency and concentrated surface markings on the more transparent

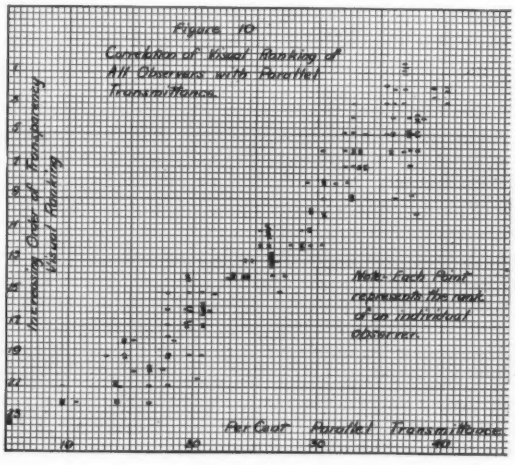
Figure 10
Correlation of Visual Ranking of All Observers with Parallel Transmittance.
Increasing Order of Transparency Visual Ranking
Note: Each Point represents the rank of an individual Observer.
Per Cent Parallel Transmittance

FIG. 10

sheets as judged by these observers. To be sure, the Institute observers would rate the sheets in the same order as that recorded by observers 7, 8 and 9 if the grading were based on unformity. Another point should be stressed. Even for the sheets which did not show such pronounced variations in transparency, the sheets with the less uniform distribution of surface markings were given the poorer rating. The reason for this fact appears to be that, in the visual estimate, the eye scans the different letters of the printed page and focuses attention on the variations in the gray appearance of the individual letters. Apparently, the sheet which shows the greatest fluctuation is then rated the poorer of the two.

In order to further justify the statements of the preceding paragraph, the results of observer 11 are more closely considered. The visual ordering of the samples is plotted against the parallel transmittance in Fig. 13. It will be seen from the figure that the correlation appears very erratic. These samples were also judged by Institute observers. There were two pairs of samples which appeared reversed in rank from that quoted by observer 11 for all methods of observation. It must be noted that observer 11 stated that, in general, the samples were close, and some difficulty was experienced in accurately ordering the samples. In view of this, he also ordered the samples as good, fair, poor and very poor. The inversion between samples 11 and 17 changed the group order of these samples. Table XII lists the inversions between observer 11 and The Institute observers' ranking.

TABLE XII

Observer 11 Rank	New Rank I. P.C. Observers	Parallel Transmittance of Samples as of New Rank
4	13	39.5
13	4	38.0
19	19	36.5
20	20	38.6
19	13	37.0
13	19	36.5
16	15	27.5
15	16	24.7
11	17	19.7
17	11	15.2

It is to be seen that samples 19 and 20 are in the same order according to both observers but reversed from the parallel transmittance order. This inversion brings up the point mentioned in the theoretical discussion with regard to absorption in the sheet. Sample 19 is definitely deeper in color than is sample 20, while the differences in

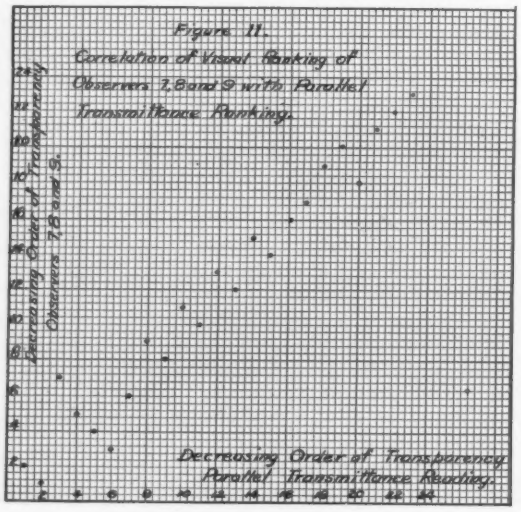
Figure 11.
Correlation of Visual Ranking of Observers 7, 8 and 9 with Parallel Transmittance Ranking.
Increasing Order of Transparency Observers 7, 8 and 9
Decreasing Order of Transparency Parallel Transmittance Reading.

FIG. 11

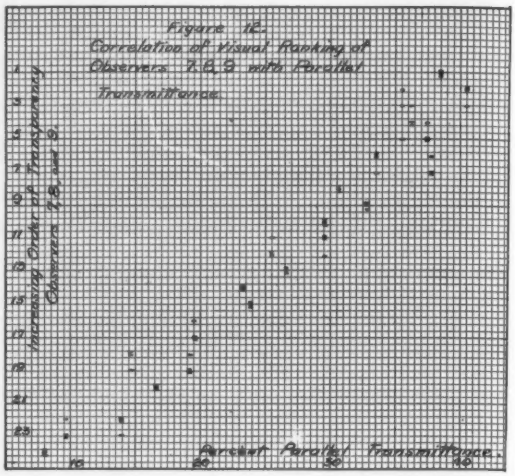
Figure 12.
Correlation of Visual Ranking of Observers 7, 8, 9 with Parallel Transmittance.
Increasing Order of Transparency Observers 7, 8, and 9
Percent Parallel Transmittance.

FIG. 12

structures and diffusing properties of the sheets are hardly distinguishable. Hence, the real inversion is to be ascribed to a decrease in the parallel transmittance due to the absorption in the sheet. For the other samples, the same conclusions that were drawn from the discussion of the results of observers 7, 8 and 9 are valid.

In view of the poor correlation between parallel transmittance and visual observation for observer 11, these samples were measured on the instrument (case A) mentioned above. It was felt that the results on this instrument (which more closely approximates the geometry of the actual visual process) might correlate more closely with those of observer 11. The results of this correlation are also given in Fig. 13. It is seen that the correlation is no better than that obtained for the parallel transmittance measurements. Consequently, it appears that observer 11 must have based his visual grading on properties of the sheet not recognized as important in the definition of transparent as set forth in this report.

The conclusions to be drawn from the consideration of the correlation of parallel transmittance and visual rankings of tinted white transparent samples are the following ones: First, the general correlation is good. Second, no advantage is gained in the correlation of the samples under consideration by using an instrument which more closely approximates the geometry of normal vision for the measurement of parallel transmittance. Third, the inversions between instrumental and visual ordering of samples are

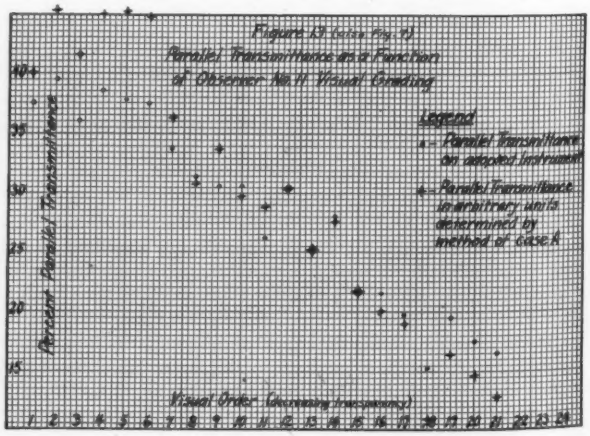
Figure 13 (also Fig. 9)
Parallel Transmittance as a Function of Observer No. 11 Visual Grading
Legend
Parallel Transmittance on recorder instrument
Parallel Transmittance in arbitrary units determined by method of case A
Percent Parallel Transmittance
Visual Order (Increasing Transparency)

FIG. 13

to be attributed to the method used in visually grading the sheets and the observer's judgment of uniformity of the sheet. An instrumental factor which contributes to this same effect is the loss of light by absorption in the sheet. Fourth, differences in parallel transmittance of one per cent in the range from 30 to 50 per cent correspond approximately to just perceptible visual differences in transparency.

Total Transmittance, Contrast Ratio, Image Visibility and Transparency Ratio as Measures of Transparency

TOTAL TRANSMITTANCE: The total transmittance, as measured on the transparency meter, is plotted in Fig. 14 as a function of visual order of transparency as graded by observers 1 to 6. The most striking feature of the plotted values is that the total transmittance for the samples of order from 1 to 12 crowd within the range of 85 to 88 per cent. This point has been the major practical objection to instruments which have been designed to measure total transmittance.

The variation of parallel transmittance as a function of

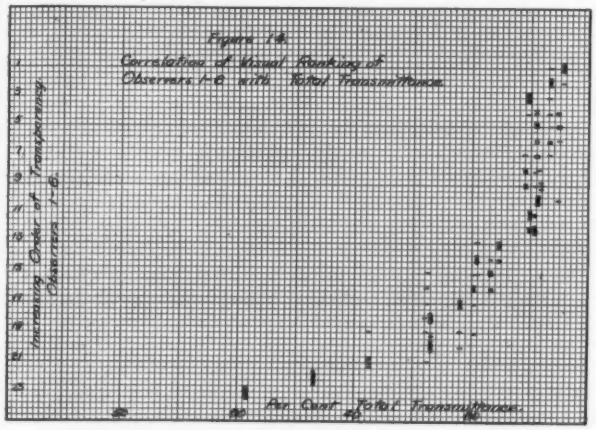

FIG. 14

total transmittance is plotted in Fig. 15. It is seen that the parallel transmittance is varying rapidly in the range of high transparency relative to the change in total transmittance. It is this fact which accounts for the increased percentage range of parallel transmittance for the samples of high transparency. In the range of low transparency, the value of parallel transmittance approaches zero too rapidly to provide an accurate value on papers of parallel transmittance less than 5 per cent. On the other

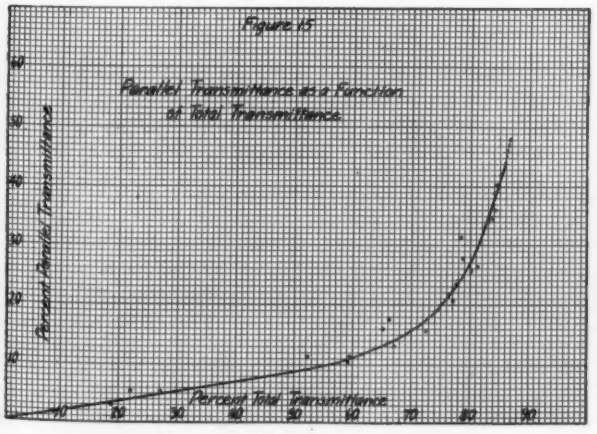

FIG. 15

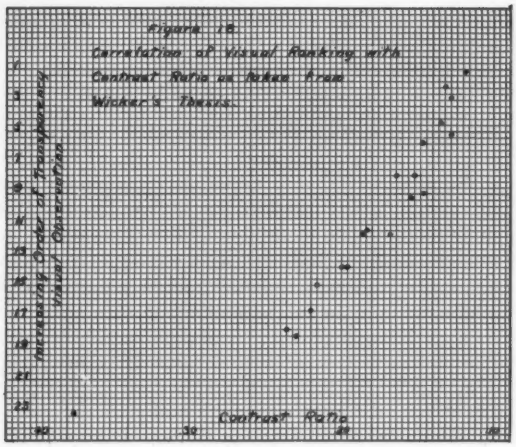

FIG. 16

hand, accurate values of the total transmittance may be obtained for this range.

Transparency, as measured on the K. and N. opacimeter, is given in Table XIII as a function of total transmittance as measured on the experimental instrument. The correlation is only fair for the range of the tinted white papers. When deeply colored samples are measured, there is practically no correlation between the two sets of values.

The Westinghouse Trans-o-meter is designed to measure the total transmittance of a sheet for the case of diffuse illumination. The results on this instrument are subject to the same criticism as are the other measures of total transmittance. This instrument is considered in detail in Paper XIV.

CONTRAST RATIO: The contrast ratio is used widely as a measure of the opacity of highly opaque sheets. The measurement can be extended to the range of glassine papers by using great care in obtaining the reflectance readings. The reflectance readings over black on the most transparent glassines are of the order of 10 per cent. Visually distinguishable differences between certain of these samples correspond to differences in the third significant figure which must be interpolated in the measurement. The percentage range for the glassine papers is of the same order as that of the parallel transmittance measurements.

Fig. 16 is reproduced from Dr. Wicker's thesis. It shows the contrast ratio plotted as a function of the

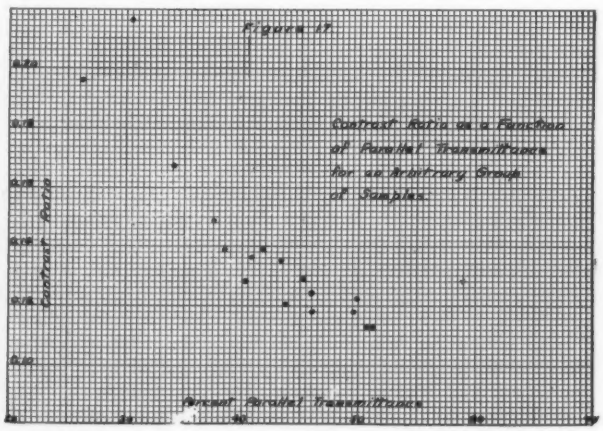

FIG. 17

visual ordering of the samples as graded by the five observers included in that work. It is seen that the correlation is of the same order of magnitude as that obtaining for the parallel transmittance measurements. If the contrast ratio scale was magnified to correspond to the same relative percentage difference between samples, these differences would be more striking.

For the sake of completeness, the measurements of contrast ratio relative to both parallel transmittance and transparency ratio are given in Figs. 17 and 18 for an arbitrary group of samples. These samples were chosen because of their uniformity of transparency and because of the small differences existing between their visual transparencies. It will be readily seen from the curves that discordant results may be expected between measurements of either parallel transmittance or transparency ratio and contrast ratio for those samples which will cause argument between visual observers.

It is to be noted that the effects of absorption in the sheet are neglected in the same way as they are in the measurement of parallel and total transmittance. However, on sheets of relatively high transparency the contrast ratio method enhances the differences due to absorption by approximately a factor of two. This fact accounts for some of the inversions observed in Figs. 17 and 18.

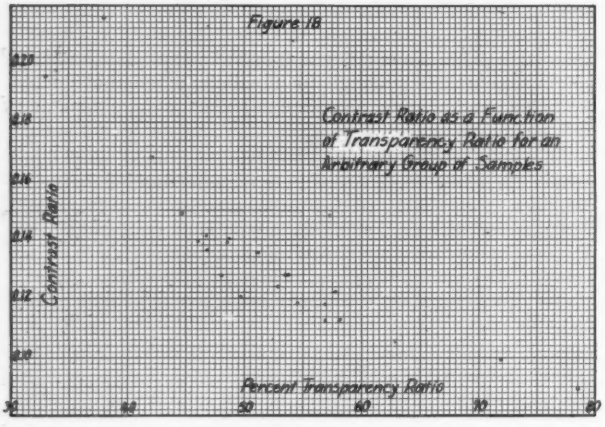
Figure 18
Contrast Ratio as a Function of Transparency Ratio for an Arbitrary Group of Samples
Contrast Ratio
Percent Transparency Ratio

FIG. 18

IMAGE VISIBILITY: The data presented under this section has been taken from the thesis of D. B. Wicker. It will be recalled that the concept of "image visibility" was developed objectively to describe the process used in grading transparent sheets in contact with a printed page.

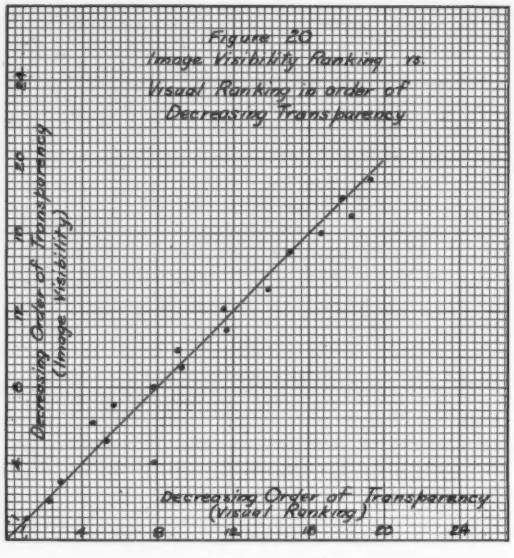
Figure 20
Image Visibility Ranking vs. Visual Ranking in order of Decreasing Transparency
Decreasing Order of Transparency (Image Visibility)
Decreasing Order of Transparency (Visual Ranking)

FIG. 20

Fig. 19 presents the results of visual ordering of 23 samples as a function of the image visibility. The observers in this case were experienced paper men but were not specialized in the glassine field. The observations were made under 90 degrees illumination and 45 degrees viewing. The samples were spaced from the printed page by a quarter inch thick piece of plate glass. The visual order quoted is an arithmetic average of the orders. The image visibility was calculated from equation (7). The values of transmission and reflectance appearing therein were measured on a special photometric device which employed integrating spheres for collecting the transmitted and reflected light.

The results of Fig. 19 indicate reversals between the visual and instrumental ordering. The correlation is a little better than observed by the other methods. This is to be seen in Fig. 20, in which the instrumental ordering of samples is plotted versus the visual ordering.

Theoretically, the same spuriously low transparency for sheets of appreciable absorption coefficients will occur for the image visibility measurements as occur for the contrast ratio measurements. This may be seen from the

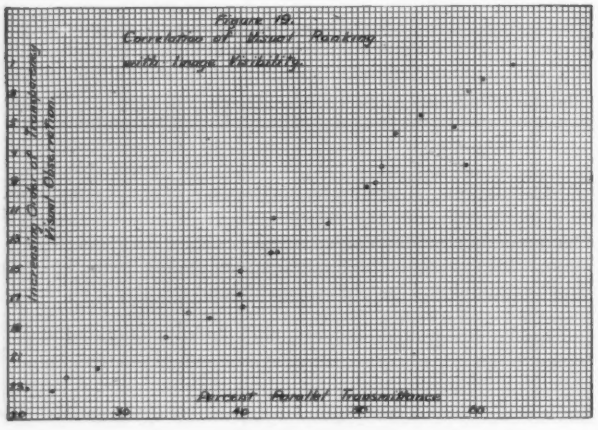
Figure 19
Correlation of Visual Ranking with Image Visibility
Increasing Order of Transparency Visual Observation
Percent Parallel Transmittance

FIG. 19

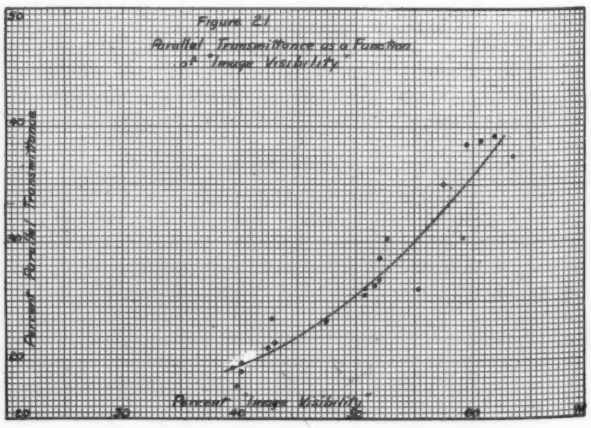
Figure 21
Parallel Transmittance as a Function of "Image Visibility"
Percent Parallel Transmittance
Percent "Image Visibility"

FIG. 21

way the total transmission enters the expression for the image visibility as given by equation (7).

TABLE XIII.—K. AND N. TRANSPARENCY, PARALLEL TRANSMITTANCE AND TOTAL TRANSMITTANCE FOR TINTED WHITE PAPERS

Sample No.	K. & N. Transparency	Per Cent Total Transmittance	Per Cent Parallel Transmittance
a	91.0	84.3	39.0
b	89.0	83.0	34.0
c	90.3	85.1	42.2
d	90.2	84.2	36.2
e	89.5	83.5	34.4
f	89.0	84.3	40.2
g	86.0	80.0	25.4
h	87.0	81.2	26.1
i	85.5	77.0	20.7
j	83.8	76.8	21.9
k	86.5	79.2	27.8
l	78.3	66.0	17.7
m	73.5	59.4	10.3
n	79.5	67.1	13.2
o	85.2	77.6	23.6

If it be assumed that the image visibility measurements really correlate better with visual observation than do the other measures, it is then interesting to see the variation of parallel transmittance, transparency ratio and contrast

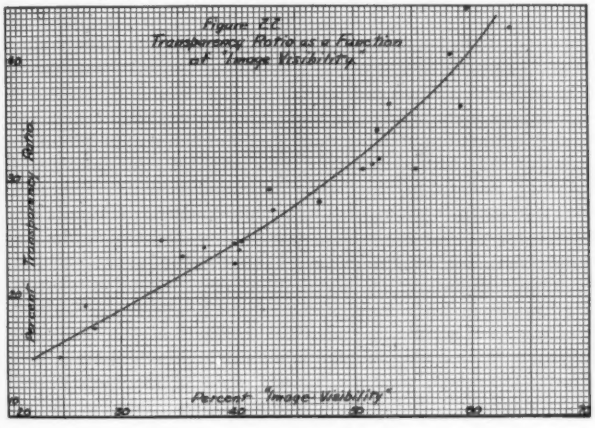

FIG. 22

ratio with image visibility. The values for all these quantities from Wicker's thesis are given in Figs. 21, 22 and 23.

Important differences between the parallel transmittance and the image visibility points are seen in these figures. These differences are quantitative evidence in favor of the arguments given relative to the inversion of order between visual observations and the instrumental measures.

TRANSPARENCY RATIO: It was the original hope of this

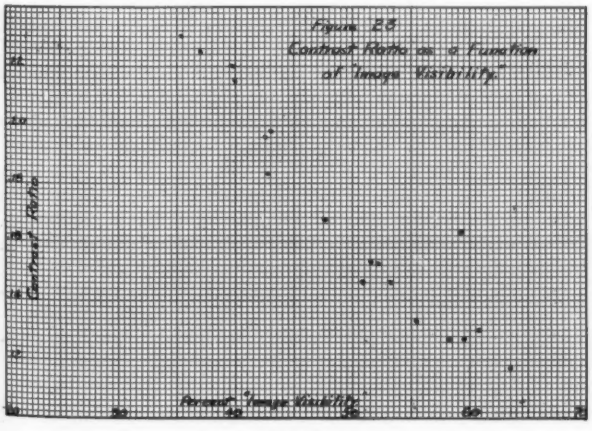

FIG. 23

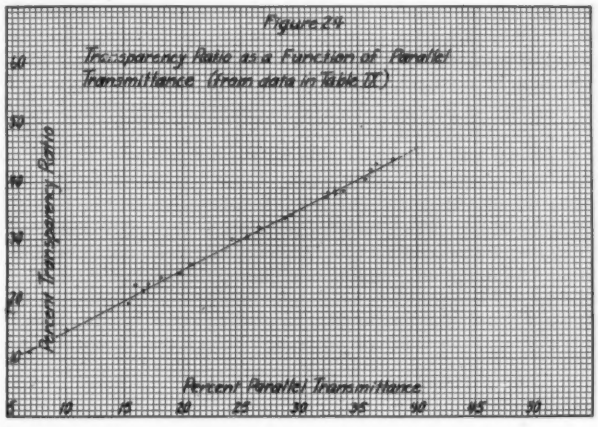
Figure 24
Transparency Ratio as a Function of Parallel Transmittance (from data in Table II)
Percent Transparency Ratio
Percent Parallel Transmittance

FIG. 24

investigation that an instrument could be developed for the successful measurement of the transparency of the general class of transparent papers. This class of papers was to include transparent papers of all colors. The major effort was directed to the study of the near white glassines. While no rigorous study of the deeply colored sheets has yet been made, the individual samples which have so far been studied indicate that the measurement of transparency ratio is the best measure of transparency of papers of all colors.

Figs. 24 and 25 show the values of transparency ratio as functions of parallel transmittance for two sets of samples. Fig. 24 represents data for the samples which were visually graded by observers 1-6. Fig. 25 includes the samples previously used to obtain the data for Figs. 17 and 18. The data in Fig. 24 show a closely linear relation existing between parallel transmittance and transparency ratio. There are only two important inversions. However, the data shown in Fig. 25 show five inversions, but the linear relation persists. These data demonstrate the errors which would be involved in stating that a rigorous relation exists between these two measures of transparency. It is this lack of ability to state a rigorous relation existing between any two of the possible quantitative measures of transparency which precludes the possibility of predicting the value of one of the measures from a given value of the other.

The transparency ratio, which is defined by equation (14), is the instrumental equivalent of the equation, which defines the fraction of the light transmitted in a given

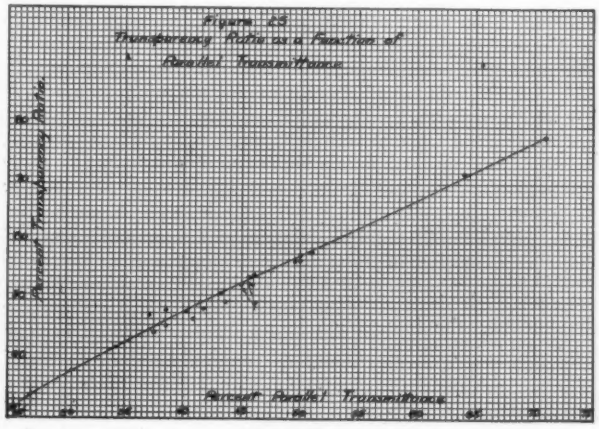
Figure 25
Transparency Ratio as a Function of Parallel Transmittance
Percent Transparency Ratio
Percent Parallel Transmittance

FIG. 25

angular range relative to the total transmittance. In the range of highly transparent papers, it can be seen that, to a first approximation, a function representing the percentage of light transmitted within a given angular range can be written as a product of two factors. The first factor will be a function of the scattering coefficient of the sheet, and the second will be dependent on the absorption coefficient. If the intensity of the light transmitted by the sheet within a small wavelength range be considered, it can be shown that the transparency ratio represents the fraction defining the intensity transmitted within the angular range defined by the geometry of the instrument. To this approximation, the transparency ratio is independent of absorption coefficient, and, consequently, the transparency ratio would be expected to give a measure of transparency which would be independent of the color of the sheet.

It will be recalled that in several foregoing instances, inversions in order based on parallel transmittance of even lightly tinted sheets have been attributed to the effect of absorption. In the case of deeply colored sheets, the effect of absorption is to produce serious inversions in ordering based on parallel transmittance. For the deeply colored sheets, which have so far been studied, these inversions were largely eliminated when ordering was based on transparency ratio values.

The objections to this ratio as a strict measure of transparency, independent of the absorption in the sheet, are given by the previous consideration of equation (4). The only real answer to the objection raised by this consideration lies in the study of the spectral distribution of the energy transmitted by the sheet for different angles of emergence.

The observation that the color of a glassine sheet does not rapidly change as the sheet is viewed at different angles with the normal to the sheet can be cited as empirical evidence which allows the separation of the scattering and absorption factors.

It is to be noted that, in the range of tinted white papers, a few examples arise in which the parallel transmittance value gives a slightly better correlation with visual grading of the sheet than does the transparency ratio. This is to be understood from the fact that the transparency ratio does not give as great a weight to the percentage of light diffusely reflected from the first surface of the sheet as does the parallel transmittance value. From the point of view of a practical control measure of transparency, the parallel transmittance possesses the advantage of a single measurement without the need of calculation. It must be emphasized that a sharp line cannot be drawn between tinted white and colored glassine sheets; hence, the transparency ratio is recommended for the general measurement of transparency.

Summary

The definition of "transparent" as given by Webster, "having the properties of transmitting rays of light so that bodies can be distinctly seen through", is chosen as a working definition of "transparent" as applied to glassine papers.

The method and factors included in the judgment of the relative transparency of two sheets are discussed. The optical properties of the sheet which influence transparency are reviewed. The theoretical expressions and limitations thereon for the intensity of the light transmitted by a diffusing medium are discussed. The uses of total transmittance, contrast ratio, and image visibility as measures of transparency are treated, and the theoretical argument underlying the use of the two latter quantities is also given. An example is given for which the angular distribution of energy transmitted by a sheet is known, and it is shown that the necessary condition for transparency is high parallel transmittance.

The use of another new quantity, transparency ratio, is presented.

The specifications of a transparency tester are given. An instrument based on these specifications, and constructed for the measurement of both parallel transmittance and transparency ratio is described. The theoretical treatment of the definition and measurement of the quantities, parallel transmittance, total transmittance and transparency ratio is presented, and it is emphasized that the quantities are defined by the instrument used in the measurement.

The influence on parallel transmittance values of the instrumental variables including photocell sensitivity, lamp filament voltage, lamp filament focus, the solid angle subtended by the photocell sensitive surface and the apertures are discussed. Sensitivity, reproducibility, and calibration of the instrument are treated in separate sections.

The correlation of the visual grading of eleven different observers with the instrumental values of parallel transmittance, total transmittance, and transparency ratio is presented with treatment of specific inversions between instrumental and visual ordering of samples. Charts and tables are given showing the relations between the following quantities taken in pairs: total transmittance, contrast ratio, image visibility, parallel transmittance, and transparency ratio.

It is concluded that parallel transmittance is a good single measure of the transparency of tinted white glassine sheets and can be used for mill control of paper of this class. It is to be strongly emphasized that the measurement of transparency ratio, which may be extended to include colored sheets, is to be preferred as the best general measure.

Literature Cited

(1) Ryde and Cooper, "The Scattering of Light by Turbid Media," *Proc. Royal Soc.*, London, A (131): 451-75 (1931).
(2) McNicholas, H. J. "Absolute Methods of Reflectometry." *Bur. of Standards J. Research* 1: 29 (1928).
(3) Wicker, D. B. "The Fundamental Attributes of a Glassine Sheet which Affect its Transparent Qualities." Doctor's Thesis, Institute of Paper Chemistry, 1935.

Woodlands Section to Meet

On July 15 and 16 there will be held the Summer Meeting of the Woodlands Section of the Canadian Pulp and Paper Association, at Singer, Quebec, about sixty miles east of Ottawa, on the woods operations of the Singer Manufacturing Company.

The program will include papers and discussions, demonstrations of new machinery and equipment of special interest to woods operators, and inspection of operations of the host company.

There will be a registration fee of $5 which will include meals the two days and sleeping accommodations.

Singer can be reached conveniently by car from Ottawa in two hours (63 miles via Thurso); and from Montreal in three and a half hours (121 miles). There are trains, however, from Ottawa and from the Windsor Station in Montreal, to Thurso.

For those driving to Singer there will be signposts on the way between Thurso or Papineauville and Singer. For those coming to Thurso by train they should inquire on arrival at the Union Hotel from Mr. Periard about taxi service to Singer.

It is hoped there will be good weather but it is suggested that those attending bring woods boots and a raincoat.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JULY 10, 1937
SUMMARY

Cigarette paper	984 cs.
Wall paper	3 bxs., 1 ble.
Newsprint	8,163 rolls
Printing paper	38 cs.
Wrapping paper	17 cs.
Packing paper	100 bls.
Filter pulp	12 crates, 1 cs.
Filter compound	100 bls.
Filter paper	12 bls., 8 cs.
Metal coated paper	24 cs.
Photo paper	9 cs.
Basic paper	25 crates
Decalcomania paper	19 cs. (duplex)
Decalcomanias	20 cs.
Transfer pictures	14 cs.
Colored paper	1 cs.
Buff paper	11 bls.
Tissue paper	10 cs.
Card board	3 cs.
Paper tubes	242 pkgs.
Miscellaneous paper	585 pkgs., 225 rolls, 36 cs.

CIGARETTE PAPER

Champagne Paper Corp., *Ile de France,* Havre, 917 cs.
Standard Products Corp., *Ile de France,* Havre, 60 cs.
De Mauduit Paper Corp., *Ile de France,* Havre, 2 cs.
Gluckman & Strauch, *Exeter,* Genoa, 5 cs.

WALL PAPER

——, *Europa,* Bremen, 1 ble.
S. K. Lonegran, *Drottningholm,* Gothenburg, 3 bxs.

NEWSPRINT

International Paper Sales Co., *Arizpa,* Dalhousie, 1333 rolls.
International Paper Co., *Arizpa,* Dalhousie, 3002 rolls.
International Paper Co., *G.T.D.,* Gatineau, 304 rolls.
——, *Bronnoy,* Port Alfred, Que., 2227 rolls.
H. G. Craig Co., *A.C.D.,* Donnacona, 297 rolls.
Jay Madden Corp., *St. Louis,* Hamburg, 300 rolls.
Jay Madden Corp, *St. Louis,* Bremen, 355 rolls.
Perkins Goodwin & Co., *Deutschland,* Hamburg, 345 rolls.

PRINTING PAPER

Oxford University Press, *Samaria,* Liverpool, 13 cs.
R. Wilson Paper Corp., *Cameronia,* Glasgow, 13 cs.
F. C. Strype, *Cameronia,* Glasgow, 7 cs.
Steiner Paper Corp., *Europa,* Bremen, 5 cs.

WRAPPING PAPER

Keller Dorian Paper Co., *Exeter,* Genoa, 9 cs.
——, *St. Louis,* Hamburg, 8 cs.

PACKING PAPER

J. P. Heffernan Paper Co., *Deutschland,* Hamburg, 100 bls.

FILTER PULP

Gerhard & Hey, *Veendam,* Rotterdam, 12 crates, 1 cs.

FILTER COMPOUND

——, *Deutschland,* Hamburg, 100 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., *American Banker,* London, 8 cs.
——, *Deutschland,* Hamburg, 12 bls.

METAL COATED PAPER

K. Pauli Co., *St. Louis,* Bremen, 24 cs.

PHOTO PAPER

——, *Deutschland,* Hamburg, 9 cs.

BASIC PAPER

Globe Shipping Co., *St. Louis,* Bremen, 25 crates.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Samaria,* Liverpool, 19 cs. (duplex).

DECALCOMANIAS

Sellers Transportation Co., *Europa,* Bremen, 20 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Europa,* Bremen, 14 cs.

COLORED PAPER

Lansen Naeve Corp., *Deutschland,* Hamburg, 1 cs.

BUFF PAPER

Nestles Milk Products, Inc., *Samaria,* Liverpool, 11 bls.

TISSUE PAPER

S. Resnik, *Hokuroku Maru,* Kobe, 10 cs.

CARD BOARD

International F'd'g Co., *Veendam,* Rotterdam, 3 cs.

PAPER TUBES

——, *Deutschland,* Hamburg, 242 pkgs.

MISCELLANEOUS PAPER

T. N. Fairbanks Co., Inc., *Tai Ping,* Yokohama, 12 cs.
Meadows Wye & Co., *Ile de France,* Havre, 2 cs.
Moller Products Corp., *Kongo Maru,* Yokohama, 22 cs.
The Borregaard Co., Inc., *Drottningholm,* Gothenburg, 585 pkgs., 225 rolls.

RAGS, BAGGING, ETC.

——, *Samaria,* Liverpool, 46 bls. rags.
Royal Manfg. Co., *Tai Ping,* Kobe, 34 bls. rags.
Manufacturers Trust Co., *Tai Ping,* Kobe, 100 bls. cotton waste.
Manufacturers Trust Co., *Pennland,* Antwerp, 20 bls. rags.
——, *American Banker,* London, 77 bls. old strings.
D. M. Hicks, Inc., *Cavallo,* Hull, 250 bls. old hemp shoes.
——, *Exeter,* Alexandria, 109 bls. paper stock.
R. J. Ross & Co., Inc., *Exeter,* Alexandria, 310 bls. rags, 147 bls. old cottons stock.
R. Blank, *Exeter,* Alexandria, 49 bls. old cottons.
W. Steck & Co., *Exeter,* Alexandria, 96 bls. baggings, 109 bls. rags.
E. J. Keller Co., Inc., *Exeter,* ——, 128 bls. rags, 108 bls. baggings, 170 bls. paper stock.
Manufacturers Trust Co., *Hokuroku Maru,* Kobe, 100 bls. picker waste.
D. S. Stern, *Kongo Maru,* Kobe, 250 bls. cotton waste.
Linter Supply Co., *Kongo Maru,* Kobe, 200 bls. cotton waste.
——, *Deutschland,* Hamburg, 59 bls. new cuttings.
E. J. Keller Co., Inc., *J. Christensen,* ——, 89 bls. baggings.

GLUE STOCK, ETC.

Darmstadt Scott & Courtney, *Tai Ping,* Kobe, 70 bls. glue stock.
Darmstadt, Scott & Courtney, *Veendam,* Rotterdam, 53 bls. glue stock.
Transatlantic Animal By Products, *Veendam,* Rotterdam, 200 bags bone glue.

OLD ROPE

Chase National Bank, *American Banker,* London, 60 coils.
E. J. Keller Co., Inc., *American Banker,* ———, 42 coils.
———, *Cavallo,* Newcastle, 59 coils.

CASEIN

National City Bank, *Ile de France,* Havre, 200 bags.
———, *Western Prince,* Buenos Ayres, 167 bags.

WOOD PULP

Absorbo Beer Pad Co., *Vulcania,* Trieste, 1004 bls. wood pulp.
M. Sone, *Lusia C.,* Trieste, 130 bls. wood pulp.
Perkins Goodwin & Co., *Dominion Halsyd,* St. Georges, N. B., 275 tons wood pulp.
Johaneson Wales & Sparre, Inc., *Sagoporack,* Sundsvall, 1450 bls. sulphite, 290 tons.
Bank of N. Y. Trust Co., *Deutschland,* Hamburg, 530 bls. wood pulp, 106 tons.
M. Sone, *Belvedere,* Trieste, 206 bls. wood pulp.

WOOD PULP BOARDS

H. Fuchs & Son, *Drottningholm,* Gothenburg, 80 crates.

NEWARK IMPORTS

WEEK ENDING JULY 10, 1937

H. G. Craig Co., *Newscarrier,* Donnacona, 347 rolls newsprint.
H. G. Craig Co., *Donpaco,* Donnacona, 315 rolls newsprint.

ALBANY IMPORTS

WEEK ENDING JULY 10, 1937

International Paper Co., *M. C. Holm,* Newcastle, N. B., 2000 cords pulpwood.
———, *Siredal,* Sheet Harbor, 10052 bls. ground wood pulp.
Price & Pierce, Ltd., *Sagoporack,* Stockholm, 3150 bls. unbleached sulphite, 533 tons.
Gottesman & Co., Inc., *Sagoporack,* Stockholm, 4800 bls. sulphite, 823 tons.
Lagerloef Trading Co., *Sagoporack,* Helsingsfors, 2910 bls. sulphite, 479 tons.
Lagerloef Trading Co., *Sagoporack,* Wiborg, 413 bls. sulphate, 77 tons; 7003 bls. sulphite, 1199 tons.

PORTLAND IMPORTS

WEEK ENDING JULY 10, 1937

M. Sone, *McKeesport,* Hamburg, 2730 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING JULY 10, 1937

International Paper Sales Co., *Arizpa,* Cornerbrook, 1586 rolls newsprint.
M. Sone, *Ginheim,* Sundsvall, 1800 bls. wood pulp.
E. J. Keller Co., Inc., *Beemsterdyk,* ———, 65 bls. baggings.
Parsons & Whittemore, Inc., *McKeesport,* ———, 605 bls. wood pulp.

WEEK ENDING JULY 3, 1937

———, *Black Tern,* Rotterdam, 7 bls. rags.
Brown Bros. Harriman & Co., *Black Tern,* Rotterdam, 43 coils old rope.
Royal Manfg. Co., *Black Tern,* Antwerp, 82 bls. cotton waste.
———, *Black Tern,* 137 rolls wrapping paper; 23 bls. rags.
Brown Bros. Harriman & Co., *Black Tern,* Antwerp, 76 bls. flax waste.
Spauling Fibre Co., *Black Tern,* Antwerp, 106 bls. hemp waste.
Irving Trust Co., *Black Tern,* Antwerp, 97 bls. bagging.
American Express Co., *Black Tern,* Antwerp, 264 rolls wrapping paper.
International Purchasing Co., *Black Tern,* Antwerp, 183 coils old rope.
International Paper Sales Co., *Arizpa,* Cornerbrook, 3201 rolls newsprint.
E. J. Keller Co., Inc., *Kiyokawa Maru,* ———, 200 bls. rags.
———, *Pipestone County,* Dunkirk, 69 bls. rags.
Irving Trust Co., *Pipestone County,* Dunkirk, 85 bls. bagging, 43 bags glue stock.
Price & Pierce, Ltd., *Ginnheim,* ———, 3000 bls. unbleached sulphite.
Price & Pierce, Ltd., *Tennessee,* ———, 2250 bls. unbleached sulphate; 5334 bls. unbleached sulphite; 250 bls. unbleached mechanical pulp.
Gottesman & Co., Inc., *Ginnheim,* Sweden, 1750 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 10, 1937

———, *Bronnoy,* Port Alfred, Que., 3431 rolls newsprint.
———, *Exeter,* Alexandria, 14 bls. bagging, 10 bls. rags.
———, *Sagoporack,* Sandarne, 250 bls. sulphite, 50 tons.
———, *Sagoporack,* Sandarne, 925 bls. sulphate, 185 tons.
———, *Sagoporack,* Hernosand, 1224 bls. sulphite, 204 tons.
Atterbury Bros., Inc., *Sagoporack,* Sundsvall, 840 bls. dry pulp, 140 tons.
Mead Sales Co., Inc., *Sagoporack,* Sundsvall, 2100 bls. sulphite, 350 tons.
Johaneson Wales & Sparre, Inc., *Sagoporack,* Sundsvall, 850 bls. sulphite, 160 tons.
F. Whitaker & Co., *Sagoporack,* Copenhagen, 6 bls. rags.
———, *Sagoporack,* Copenhagen, 30 rolls paper.
E. J. Keller Co., Inc., *Spaarndam,* ———, 52 bls. paper stock.
E. J. Keller Co., Inc., *Collamer,* ———, 39 bls paper stock.

WEEK ENDING JULY 3, 1937

Glant & Co., *Kiyokawa Maru,* Kobe, 14 bls. thread waste.
J. M. Hagy Waste Works, *Kiyokawa Maru,* Kobe, 73 bls. rags.
———, *Kiyokawa Maru,* Kobe, 100 bls. cotton waste.
E. J. Keller Co., Inc., *Kiyokawa Maru,* ———, 300 bls. rags.
Bankers Trust Co., *Belvedere,* Sebenik, 3600 bls. sulphite.
Lagerloef Trading Co., *City of Fairbry,* Wiborg, 4224 bls. sulphite, 837 tons; 62 bls. sulphate, 12 tons.
Wilkinson Bros. Co., *City of Fairbury,* Kota, 63 rolls newsprint.
J. W. Hampton, Jr., & Co., *City of Fairbury,* Kota, 437 rolls newsprint.
Lagerloef Trading Co., *City of Fairbury,* 905 rolls wood pulp boards, 104 tons.
Jay Madden Corp., *City of Fairbury,* Kota, 167 bls. wood pulp boards, 25 tons; 253 rolls newsprint.

CAMDEN IMPORTS

WEEK ENDING JULY 10, 1937

———, *Sagoporack,* Hernosand, 3000 bls. sulphate, 500 tons.
Bulkley Dunton Pulp Co., *Sagoporack,* ——— 2640 bls. sulphate, 440 tons.

BALTIMORE IMPORTS

WEEK ENDING JULY 10, 1937

———, *Bronnoy,* Port Alfred, Que., 2538 rolls newsprint.
Pagel Horton & Co., Inc., *Ginheim,* Sweden, 3950 bls. wood pulp.
Price & Pierce, Ltd., *Ginheim,* ———, 2500 bls. unbleached mechanical; 150 bls. unbleached sulphate; 6000 bls. unbleached sulphite.
Gottesman & Co., Inc., *Ginheim,* Sweden, 2190 bls. wood pulp.
Parsons & Whittemore, Inc., *City of Baltimore,* ———, 476 bls. wood pulp.
Parsons & Whittemore, Inc., *City of Hamburg,* ———, 1114 bls. wood pulp.

WEEK ENDING JULY 3, 1937

Congoleum Nairn Co., *Examiner,* Marseilles, 442 bls. rags.
———, *Black Eagle,* Rotterdam, 540 bls. wood pulp, 108 tons.
Washington Post, *Markland,* Liverpool, N. S., 2782 rolls newsprint.
Price & Pierce, Ltd., *Kelkheim,* ———, 1800 bls. unbleached sulphite; 2880 bls. unbleached sulphate.
Price & Pierce, Ltd., *Wanja,* ———, 2292 bls. unbleached sulphite; 1920 bls. unbleached sulphate.
Gottesman & Co., Inc., *Kelkheim,* Sweden, 1500 bls. wood pulp.
Gottesman & Co., Inc., *Wanja,* Sweden, 450 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JULY 10, 1937

Pagel Horton & Co., Inc., *Karpfanger,* Sweden, 3000 bls. wood pulp.

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Long Life Phosphor Bronze Flange
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Sinclair DOUBLE TRUSS DANDY ROLLS Mounted in the Sinclair Single Pedestal Stand is the last word in an Open End Dandy Roll Application
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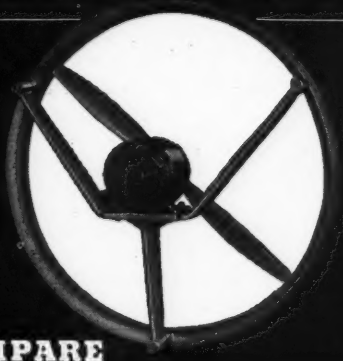

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PROPELLAIR TO DO IT

CHARLESTON IMPORTS

WEEK ENDING JULY 10, 1937

E. J. Keller Co., Inc., *Sundance,* ——, 160 bls. baggings.

NEW ORLEANS IMPORTS

WEEK ENDING JULY 10, 1937

M. Sone, *Tatra,* Sundsvall, 6000 bls. wood pulp.

WEEK ENDING JULY 3, 1937

Johaneson Wales & Sparre, Inc., *Karpfanger,* Sundsvall, 125 bls. sulphite, 25 tons.

Mead Sales Co., Inc., *Karpfanger,* Sundsvall, 3510 bls. kraft sulphate, 585 tons.

Pagel Horton & Co., Inc., *Karpfanger,* Munksund, 3000 bls. sulphate, 500 tons.

Bulkley Dunton Pulp Co., Inc., *Karpfanger,* ——, 3144 bls. wood pulp, 524 tons.

NORFOLK IMPORTS

WEEK ENDING JULY 3, 1937

Price & Pierce, Ltd., *Wanja,* ——, 2490 bls. unbleached sulphite.

Gottesman & Co., Inc., *Wanja,* Sweden, 9800 bls. wood pulp.

MONTREAL IMPORTS

WEEK ENDING JULY 3, 1937

Price & Pierce, Ltd., *Chr. Bors,* ——, 2100 bls. unbleached sulphite.

NEW LONDON IMPORTS

WEEK ENDING JULY 3, 1937

Price & Pierce, Ltd., *Tennessee,* ——, 3150 bls. unbleached sulphate; 1500 bls. unbleached sulphite.

D. Paul Schaeffer Dead

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 6, 1937—D. Paul Schaeffer, salesman for Garrett-Buchanan Company, passed away on July 3. Mr. Schaeffer was a patient in St. Joseph's Hospital where he was operated on for gallstones. He was 44 years of age and unmarried.

Mr. Schaeffer had been connected with the paper business for upwards of 30 years. He was a member of George H. Imhof Post No. 153, A. L., and St. John's Assembly No. 28, A. O. M. P.

Funeral services were held on Tuesday, July 6, from his late residence, 922 N. 4th street. Interment was in Northwood Cemetery.

A New Bristol Bulletin

A new 12-page bulletin on Bristol's recently developed Round Chart Potentiometer Pyrometers is announced for distribution by the Bristol Company, Waterbury, Conn. These instruments are available as temperature recorders and controllers—both pneumatic and electrically operating types.

The bulletin describes the construction on Bristol's Potentiometer Pyrometers, giving the special features made possible by the greatly simplified principle on which these instruments operate. Samples of the 12-inch round charts are also shown, with available ranges.

M. S. Wilder 75 Years Old

CARTHAGE, N. Y., July 12, 1937.—Mark S. Wilder, prominent paper mill manufacturer and capitalist of Northern New York, celebrated his 75th birthday this week with a gathering of friends at his summer home near Alexandria Bay. He started his career as a developer of the banking, paper, water power and transportation resources of this section when he was barely 20 years of age. With the late James A. Outterson he became one of the founders of the West End Paper Company which was incorporated in 1901. Mr. Outterson was elected president and Mr. Wilder secretary and treasurer of the company. That same year they organized the Champion Paper Company, of this village, but a few years later Mr. Wilder disposed of his holdings to Mr. Outterson. In 1905 the Diana Paper Company was formed at Harrisville with Mr. Wilder one of its founders and directors and in 1907 he and his brother acquired complete control. They made the company a success by obtaining production contracts with Sears, Roebuck & Co. which they held for several years. When the Remington-Martin Company, Raymondville Paper Company and the Norwood Paper Company went into bankruptcy in 1914, following the death of the founders, Mr. Wilder was named temporary receiver. That same year the Remington Paper and Power Company was organized to take over the properties and Mr. Wilder was named president. The aim of the new company was to conserve the properties for its stockholders and in 1916 Mr. Wilder frustrated the purchase of the mills by the *New York World* by buying them himself. Soon afterwards he negotiated their sale to Dan R. Hanna, of Cleveland, Ohio, and the Hanna Paper Company was formed. This concern later disposed of the mills to the St. Regis Paper Company.

Instruments for Paper Testing

The American Instrument Company, Inc., has just issued an interesting pamphlet entitled Instruments For The Paper Testing Laboratory, which contains illustrations and descriptions of the following instruments:—Absorptiveness Tester, Paper Cleansing and Recovery Apparatus for Processed Papers, Carson Curl Sizing Tester, Aminco Wet Rug Tester, Dry Indicator Test for Sizing and Water Resistance, Calibrator for Folding Testers, Carter Paper Stiffness Tester and Flexometer—for Measuring Flexural Properties of Paper.

A copy of this bulletin may be obtained gratis by writing to the American Instrument Company, Inc., 8010-8020 Georgia avenue, Silver Spring, Ma.

Koepke Co. to Enter Paper Field

APPLETON, Wis., July 6, 1937—The Koepke Construction Company of Appleton, Wis., is planning to expand its activities to include the erection and setting of paper mill machinery, according to announcement of Lawrence Koepke, president.

The Kimberly-Clark Corporation, Neenah, Wis., is retiring from the field of paper and pulp mill machinery erection, according to S. F. Shattuck, vice-president. Coincident with this decision, the Koepke company will engage the services of highly skilled craftsmen who have been employed by Kimberly-Clark in its field service unit. These craftsmen are expected to continue to make machine installations for Kimberly-Clark under the Koepke management.

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CHOPPERS — SHREDDERS

Bob Fuller Goes To Savannah

William J. Walker, plant manager of the Savannah Pulp and Paper Laboratory, has accepted a position with the Johns-Manville Corporation, it was announced yesterday by Dr. Charles H. Herty, director, says the *Sunday News* of Savannah, Ga., in its issue of last week.

Mr. Walker left Friday for Oswego, N. Y., and later it is understood, will be stationed in Canada as manager of one of the branch plants of the Johns-Manville Corporation.

A. C. "Bob" Fuller of Moss Point, Miss., will succeed Mr. Walker as plant manager, Dr. Herty stated. Mr. Fuller has already arrived.

Mr. Walker would have been at the laboratory for one year on July 1, having succeeded William G. McNaughton at that time.

While with the laboratory, Mr. Walker did some excellent work, Dr. Herty stated. "His main contribution," Dr. Herty said, "was in developing the quality of ground wood produced. He did this by advocating and securing the installation of coarser grit stones for the grinding process, showing that coarser grit was needed for grinding pine than for spruce wood."

Before coming to Savannah, Mr. Walker had had extensive experience. He was in charge of the Gatineau plant of the International Paper Company in Quebec for nine years. He is the son of Charles Walker, in charge of the Canadian plants of the International Paper Company. "He grew up in the paper business," Dr. Herty said. Mr. Walker is a native of New York state and a graduate of engineering at Cornell University.

Mr. Fuller, who will succeed Mr. Walker, is also an experienced paper man. He is a native of Washington state and had considerable experience at Ocean Falls in the Northwest. He was in charge of the kraft paper mill in Orange, Texas, for a time, and before coming here was associated with Southern Kraft Corporation at the Moss Point, Miss., branch mill. Mr. Fuller also served over twenty years with the Crown Willamette Paper Company at Camas, Wash., and Pacific Mills Ltd., at Ocean Falls, B. C.

Dr. Herty said Mr. Fuller was chosen for the position at the laboratory for his mill experience, for his knowledge of kraft pulp and paper and mill operations and particularly for his knowledge of sheet paper formation. "That is," Dr. Herty explained, "the method of making the wood fibers felt together in forming the sheet of paper."

"MacNaughton was a specialist in sulphite paper pulp, Walker in groundwood pulp, and now Fuller is an expert in sheet information," Dr. Herty said. "We have carried forward the developments at the laboratory that way with an expert for each process, and now we want to make the best sheet possible."

Mason-Neilan Opens Los Angeles Branch

Mason-Neilan Regulator Company has opened a branch in Los Angeles, Cal., at 1457 South Concord street. At the new branch are available improved facilities for complete service including stocks for immediate shipment, servicing facilities for regulators, instruments, valves, assembly and calibration of thermal systems and competent engineering advice on control problems.

Price Advances Expected in Chicago

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 5, 1937—Chicago paper markets were little changed during the week though local paper executives are beginning to estimate how much longer it will be before prices are again generally advanced. Specifically, groundwoods and specialties, newsprints and krafts continue to be the recognized strongest entrants in the local market. All three experienced a continuation of strong undertone and widening demand. Book and bond papers gave evidence of a further strengthening and a leveling out of demand which is evidenced as signs of a broad trend into a higher priced structure. Most mills are reporting a six day week though this condition is not entirely general, varying from capacity production down to a three day schedule. Board has tapered off from its earlier peak but resumptions upward are expected comparatively soon. The waste paper market can be characterized as "unsteady" particularly in the lower grades.

A Remarkable Engineering Material

Neoprene, an engineering material with rubber-like properties, yet one which resists the deteriorating effects of oil, heat, sunlight, chemicals and oxidation is described in detail in a new handbook published by Rubber Chemicals Division, E. I. du Pont de Nemours & Company. This presentation considers separately the effects of various types of oils, acids, sunlight, heat and other forces which result in rapid deterioration of rubber products and indicates the type of service which may be expected with a similar part of neoprene.

Specific applications of neoprene, including hose, electrical cable, molded parts, extruded material, sheet goods and gaskets are also described, with data on reasons for the use of neoprene in these applications. Of special interest is a summary of the method of making neoprene and its chemical composition.

To Build Mill at Wilmington

WILMINGTON, N. C., July 12, 1937.—Benjamin D. Reigel, chairman of the board of directors, announced today the Reigel Paper corporation had acquired a site near here and would build a wood pulp mill with a capacity of 125 tons a day, says the *News* of Greensboro, N. C.

Reigel's announcement did not specify the cost of the plant nor size of the pay roll, but it was believed the investment would amount to several million dollars, and that several hundred persons would be employed.

Fitchburg Paper Co. Closes for Repairs

[FROM OUR REGULAR CORRESPONDENT]

FITCHBURG, Mass., July 12, 1937.—The plant of the Fitchburg Paper Company here is to be closed a week for repairs. One hundred and fifty employees of the company, members of Local 12 of the International Brotherhood of Papermakers, an affiliate of the A. F. of L., have voted to go on strike and picket the mills. The concern normally employs 350 hands. The union, according to Joseph Addy, a vice-president of the brotherhood, is seeking a union shop and higher wages.

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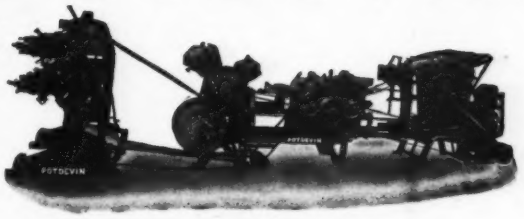

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NEW YORK

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 14, 1937.

The situation in the paper industry continued about normal for the season of the year last week, with a fair amount of activity.

A broadening tendency in the newsprint division is well sustained.

Buying of book, cover, bond, and ledger is in fair volume. Tissues are moving well. The wrapping paper market continues strong. In some quarters kraft is reported to have moved fairly well since the first of the month. A little more business has developed in box board. Shoe manufacturers are beginning to remove from storage what boxes they have on hand and are placing orders for more supplies. Specialties are moving in fairly good volume.

Chemical Pulp

Contract prices on chemical pulp remain firm, but prices on so-called spot tonnage are reported somewhat lower.

Mechanical Pulp

The demand for this type of pulp is reported fairly brisk with no change in prices.

Old Rope and Bagging

The old rope market continues about the same. Demand for domestic and foreign old manila rope is normal for the season, but small mixed rope is moving slowly. Activity in the bagging market remains unchanged. Demand for scrap and gunny bagging is regular.

Rags

Trading in the domestic rag market is light. Demand for old rags is less active than of late, with the exception of old whites which are in good request. The market for roofing grades is showing a better demand. While prices have not advanced materially, interest is beginning to be manifested.

Waste Paper

Demand for paper stock is slower. The better grades have fallen off slightly, and little buying activity is evident. The lower grades remain sluggish.

Twine

Twines are moving in better volume than usual for the season of the year. Business is good in jute, hemp, cotton, and, in fact, all twines. Prices are firm in jute sisal and hemp twines, but cotton twines continue to slip down, on account of the raw cotton decline.

The Northwest Paper Company

L. J. Walters, who has been in charge of the bond, ledger and mimeograph division of The Northwest Paper Company, and also in charge of sales to Nation Wide Papers, Inc., has resigned.

THREE SULPHITE MILLS PLANNED

(Continued from page 13)

competitor of Canadian newsprint, but it is pointed out, that day may be far distant if the Canadian manufacturer adopts and carries out a policy which will consider the interests of the American publisher, their principle. As one prominent in the industry said, the Canadian newsprint industry cannot afford to gouge.

Looks for Banner Year

Accompanying dividend checks is a letter to shareholders of Hinde & Dauch, Canada, stating that the first half of 1937 has brought the company new peaks in production and sales and that, while presently there is a slight softening in demand, the company is still running pretty well to capacity. "We feel," says General Manager L. F. Winchell, "that our earlier anticipation as to this being a banner year for the industry, as well as for ourselves, will be fully confirmed. Prices we have been forced to pay for our principal materials—pulps and paper stocks—have really been increased to higher levels than we have been able fully to reflect in our selling price, yet through greater production and increased efficiency, the spread has had no serious effect on our comparative earnings.

"Since our last letter to you, we have placed contracts for a new boiler and auxiliary equipment for our Toronto mills, which, we are confident will ensure further economies and efficiencies. Likewise, we have purchased considerable new box-making equipment, to keep up with the new trends in box manufacture."

Paper Workers Strike

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 12, 1937—At the time of writing there is some unrest among pulp and paper workers here, as a result of divided allegiance to local and international labor unions. Striking employees today tied up one plant of the Consolidated Paper Corporation—the Wayajamack plant at Three Rivers, which employs about 650 men. Operations continued, however, at two other St. Maurice Valley mills, where strikes had been declared. The strike was called by the International Brotherhood of Papermakers and the International Brotherhood of Sulphite and Paper Mill Workers, who seek recognition as the men's bargaining agency in the Corporation's three plants. They claim a majority of 1,300 workers in the mills. As against the international unions is the provincial organization known as the National Catholic Syndicate of Paperworkers. Spokesmen for the men on strike said they sought to oust the Catholic Syndicate as the official union, and called the strike after the Consolidated Paper Corporation conceded to the Catholic union the right to engage in collective bargaining at the three plants.

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 14, 1937.

BLANC FIXE—The blanc fixe market continues normal. Prices are generally holding to formerly quoted levels. The pulp is offered at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Trading in the bleaching powder market is moderately active. The contract movement is normal and prices are generally maintained at formerly quoted levels. Bleaching powder is offered at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The casein market is fairly steady. Domestic standard ground casein is now quoted at from 13 to 14 cents per pound; while domestic finely ground casein is selling at from 13½ to 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA—Conditions in the caustic soda market are fairly satisfactory. The contract movement is normal. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and ground are selling at from $2.85 to $3 per 100 pounds, in drums, at works.

CHINA CLAY—The china clay market is displaying strength. Prices are firm. Contract shipments are moving freely. Imported china clay is quoted at from $15 to $21 per ton, ship side; while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE—Business in the chlorine market is holding up well and the contract movement is normal for the season. Prices are generally maintained at formerly quoted levels. Chlorine is selling at from $2.15 to $2.25 per 100 pounds, in tank cars, at works.

ROSIN—The rosin market is little changed. Paper making gum rosin is now quoted at $7.85 and wood rosin at $8.20 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $3.65 per 100 pounds, in tank cars, at works.

SALT CAKE—Paper mill demand for salt cake is still persistent. Prices are generally steady. Salt Cake is quoted at from $12 to $13; chrome salt cake at from $11 to $12 per ton, at works; while imported salt cake is selling at from $12 to $13 per ton, ship side.

SODA ASH—The soda ash market is moderately active. Demand from the paper mills is fairly insistent. Prices are holding to former levels. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH—While demand for starch is excellent the contract movement to the paper mills is normal. Prices are steady and unchanged. Special paper making starch is now quoted at $4 per 100 pounds, in bags; and at $4.27 per 100 pounds, in barrels, at works.

SULPHATE of ALUMINA—The sulphate of alumina market is stronger. Contract shipments are moving in good volume. Commercial grades are quoted at from $1.25 to $1.60; while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton on orders of 1,000 tons, or over. On spot and nearby car loads the quotations are $21 per ton. All quotations are in car lots, at works.

TALC—Supplies of talc are moving into consumption in moderate volume. Prices are holding to schedule, in most instances. Domestic talc is quoted at from $15 to $18 per ton, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Tissues—Per Ream—

White No. 1	1.10	@	—
White No. 1 M. G.	1.07½	@	—
White No. 1½	.77½	@	—
White No. 2	.75	@	—
Anti-Tarnish M. G.	.77½	@	—
Colored	.90	@	—
Kraft	.77½	@	—
Manila	.75	@	—
Unbleached Toilet	2.60	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—

Roll, contract	42.50	@	—
Sheets	47.50	@	—

Kraft—

No. 1 Northern	5.25	@	5.75
Standard	5.00	@	—
Southern	5.00	@	—
Glazed	4.50	@	—
Striped	4.75	@	—

Boards, per ton—

News	47.50	@	—
Chip	45.00	@	—
Sgl. Mla. Ll. Chip	55.00	@	—
Jute Lined Chip	55.00	@	—
Kraft Liners	65.00	@	—
White Pat. Coated	67.50	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1.	$41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag	.....	32.20@ 37.75
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
25% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1.	$9.35@$11.50	$10.55@$12.75
No. 2.	8.50@ 10.25	9.65@ 11.75
No. 4.	7.60@ 9.25	8.80@ 10.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.45	@$14.25
No. 2 Glossy Coated	10.80	@ 12.25
No. 3 Glossy Coated	9.65	@ 11.00
No. 4 Glossy Coated	9.05	@ 10.50
No. 1 Antique (watermarked)	9.05	@ 10.50
No. 2 Offset	8.35	@ 9.50
A Grade E. F.	8.20	@ 9.50
A Grade S. & S. C.	8.45	@ 9.75
B Grade E. F.	7.60	@ 8.75
B Grade S. & S. C.	7.85	@ 9.00
C Grade E. F.	7.30	@ 8.50
C Grade S. & S. C.	7.55	@ 8.75
D Grade E. F.	7.00	@ 8.25
D Grade S. & S. C.	7.25	@ 8.50

Ivory & India at $.50 cwt. extra.

No. 3 White Linens. 4.50 @ 5.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	35.00	@36.00
Dry	40.00	@42.00

(Delivered)

No. 1 Domestic and Canadian	36.00	@37.50

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Prime Bleached Sulphite	3.25	@ 4.65
Prime Qualities— Easy-Bleaching Sulphite	3.50	@ 4.00
Strong Unbleached Sulphite	3.25	@ 3.65

(On Dock, Atlantic Ports)

Kraft Bleached	4.00	@ 4.75
Kraft Light & Strong	3.00	@ 3.75
Kraft No. 1	2.90	@ 3.65
Kraft No. 2	2.50	@ 2.75

(F.o.b. Pulp Mill)

Kraft Domestic	2.75	@ 3.25

(Delivered)

Soda Bleached	3.15	@ —

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	9.00	@ 9.25
Silesias, No. 1	6.75	@ 7.00
New Unbleached	9.25	@ 9.50
Blue Overall	7.50	@ 8.00
Fancy	3.75	@ 4.25
Washables	3.00	@ 3.50
Mixed Khaki Cuttings	4.25	@ 4.50
O. D. Khaki Cuttings	4.75	@ 5.00

Old Rags

White, No. 1—		
Repacked	3.75	@ 4.25
Miscellaneous	3.00	@ 3.25
White, No. 2—		
Repacked	2.60	@ 2.85
Miscellaneous	2.00	@ 2.25
Thirds and Blues—		
Repacked	2.00	@ 2.25
Miscellaneous	1.90	@ 2.00
Roofing Rags—		
No. 1	Nominal	
No. 2	1.10	@ 1.20
No. 3 (bagging)	.90	@ 1.00
No. 4	.90	@ 1.00
No. 5A	.75	@ .85

Foreign Rags

New Rags

New Dark Cuttings	Nominal
New Mixed Cuttings	Nominal
New Light Silesias	Nominal
Light Flannelettes	Nominal
New White Cuttings	Nominal
New Light Oxfords	Nominal
New Light Prints	Nominal

Old Rags

No. 1 White Linens	Nominal
No. 2 White Linens	Nominal
No. 3 White Linens	Nominal